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Writing Machines.

The engravings (figures 1 and 2) represent two varieties of a writing machine or "Polygraph," by which two or more copies can be written at once.

In figure 1, A and A′ are two parallel plates each about the size of a sheet of foolscap paper, and about one inch and a-half apart. Between A′ and the bottom of the machine is also a space of about an inch and a-half. These plates may be of wood, metal, or glass, In the machines now in operation, plate glass is used, as it is perfectly smooth, uniform, and not liable to warp. They are kept in position by end and bottom pieces (as represented in the engraving,) which may be of wood or any other material.

Into the right hand side of one of the end pieces, a rod, E, about nine inches long, and a quarter of an inch thick, and bent as represented in the engraving, is inserted, so that it swings horizontally and freely upon its point of insertion. To the end of this is also hinged another smaller and lighter rod or wire, G, as represented in the engraving, which also swing harizontally upon its point of connection with the rod, E. To the end of rod, G, is also hinged another rod, I, which at a few inches from its point of connection with rod, G, divides itself into two parallel prongs, J J, about an inch and a-half apart. At the ends of these prongs, and at right angles with them, two pens, O O, are inserted. These are so adjusted as that their points are precisely the same distance apart as the upper surfaces of the two parallel plates; and in such a manner as that when the prongs, R R, are swung, the one above and the other below, the plate, A, the points of the pens respectively shall be about half an inch above the respective plates. From the diagram, it is evident that each pen will have precisely the same motion. If then, a sheet of paper be placed on each plate, the writing which is done upon the upper surface will be exactly reproduced upon the lower one. The elasticity of the wires is such that the slightest pressure will bring the pens down upon the paper. By an arrangement of the inkstands, D D, upon one of the end pieces, both pens can be inked at the same time. To hold the paper firmly, a metal ferule or strap, B, is laid at one end and held by slight springs at the ends, a little above the plate. The paper being placed beneath, the bar is pressed down upon it, and held fast by the button, C. The lower sheet is held in like manner by a wooden bar, H, which by means of rods and spiral springs, is pushed down simultaneously with the upper strap, B. The whole arrangement and operation will be comprehended at a glance.

The pens are inserted through a split in the ends of the prongs, R R, and held fast by little rings or collars on the prongs. They can be changed or adjusted in a moment. Any pens will answer, but fountain pens are preferable, on account of the greater quantity of ink they hold. The pen handle is secured to the upper prong, by two loops of wire forming a universal joint, (in mechanical effect exactly like the ball and socket joint.)

It is obvious that by increasing the number of prongs, and the number of writing surfaces, the number of copies can be increased at will. The machine may also be made of any size required.

In figure 2 is represented an apparatus in which the writing is all done upon the same surface, instead of being done upon parallel surfaces. Small wires, B B, bent at right angles at the ends, L L, and inserted there into the writing surface or bed plate, so as to swing freely in their sockets, are also bent in the opposite direction, and at right angles at the other ends. These other extremities are connected together by a wire, C, the same length as the distance between the points, L L. To these extremeties also are hinged two other wires, D D, which, at their further ends, are also bent upwards at right angles, as represented in the engraving. These upward bends of the wires, D D, are passed through small holes in a light hollow steel rod, E E E. To this rod are attached the pens, P P, in the same manner as described in figure 1. All these wires swing horizontally with the greatest ease, and with no perceptible friction. The wires, B B, and D D, may be about 6 or 9 inches in length, according to the size of the machine; the rod, E E E, of any length required. The pens must be as far apart as the width of the sheets to be written on. The pen handle is attached to the bar in the same manner as in figure 1.

When not being written with, the spring and position of the wires, D D, will lift the points of the pens a little above the surface upon which the paper is placed. The slightest pressure brings them down upon the paper. By reference to the metal strap, F F, and the button, G, it will be seen that the same arrangement for holding the paper is used as in fig. 1. The inkstands, I I, are the same distance apart as the pens, which will thus be inked simultaneously. These pens should be so adjusted as that when pressed down, their points will strike at the same time. From the engraving, it will be seen that a third pen might be inserted at the right hand of the bar, E E E, so as to make three copies at once. This is entirely practicable; but usually, two copies are sufficient; and instead of a third pen, a small screw rod there, is found to be useful in regulating the pens, so as to insure their always touching the paper together. In this machine, as in the other, a writing surface of plate glass is found to be the best. With both, one of the copies can be taken in a book, by inserting the right hand side of the open volume into the space beneath the glass, and turning the next sheet down upon it.

In either apparatus, the *whole actual mechanism* consists of the wires and the sockets upon which they swing. The rest is made up of the pens, the inkstands, the writing surfaces, and the arrangement for copying in a book. It would be difficult to conceive any contrivance to accomplish the desired end, wherein their would be less friction, or greater ease of movement.

The advantages claimed for the invention are, that by it fair copies are made in ink, on good paper, and perfectly alike; that the work can be done quicker and easier than by the letter-press, or the manifold letter writer; and that the apparatus is adapted to the copying of maps, drawings, and engravings; that in structure it is exceedingly simple, and can be made in any compact and portable form desired, so as to answer the purpose of a traveling secretary; or can be attached to, and form a part of, the ordinary office desk. Beside this, almost any number of copies can be made at the same time, by constructing the machine with reference to that. As to cost, they can be sold at a price which, including the gold pens, will be considerably below that of a good letter press. They may, however, be made as expensive and ornamental as the taste and wishes of the purchaser may require.

The patentee is Nathan Ames, Esq., of Saugus, Massachusetts. The invention is secured by two separate issues of Letters Patent, dated December 12th, 1854.

More information in regard to it, as to the price and manufacture of machines, and the price and sale of rights, can be obtained from D. Shepherd, Counsellor at Law, No. 7 Wall street, New York.

AMES' POLYGRAPH.

Fig. 1

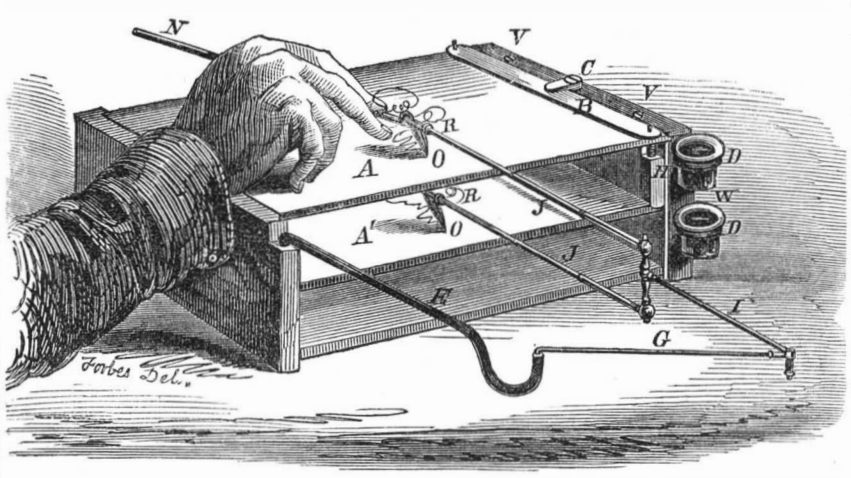
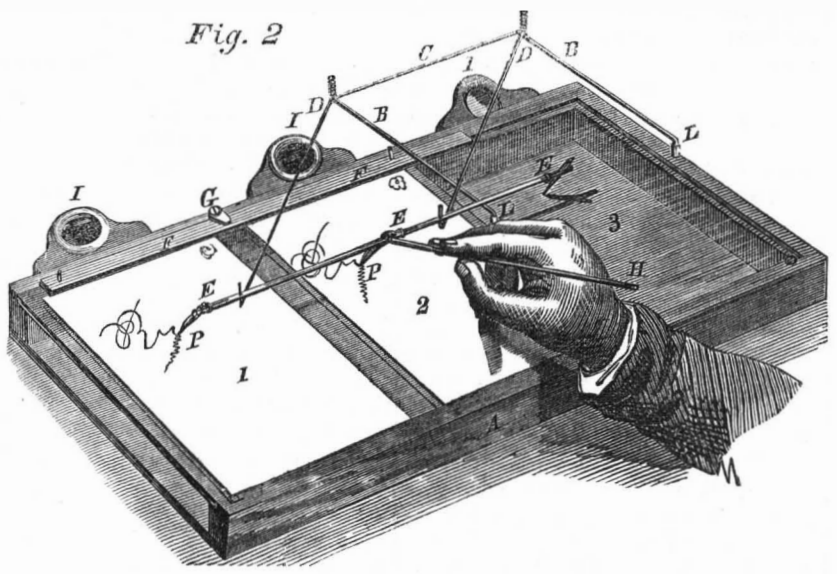


Fig. 2



Princeton College.

We learn from a catalogue recently issued, that the whole number of graduates thus far is 3090, and that there are still living 2023. The first class, that of 1748, contained *six* members, of whom *five* became clergymen; the *sixth* was a signer of the Declaration of Independence. Among the graduates there have been 1 President of the United States; 2 Vice Presidents of the United States; 13 Members of the Cabinet; 12 Foreign Ministers; 32 Chief Justices of particular States; 29 Governors of States; 32 Presidents of Colleges.

Charleston Artesian Well.

Joseph Togno, a citizen of Abbeville, S. C., writes to the *Banner*, that it is utterly impossible to obtain an artesian well, not only in the city of Charleston, but in the whole basin of Charleston, embraced within the radius of two hundred miles, and even more. His reasons are that the geological formations necessary to yield an artesian well are entirely wanting in this region, or nearly so, for all practical purposes.

McGaffey's Seed Planter.

The patent granted this week to Ives W. McGaffey, of Syracuse, N. Y., relates to the horse power planters. The improvement consists in the use of a tilt apron arranged in connection with a distributing roller, whereby the seed and manure are deposited in the furrow or hill at the same time.

Provide for the Birds.

There are few who object to cultivating an intimate acquaintance with the birds; to having them this spring chatter, rear their young, prey upon the worms and bugs, in orchard, garden, and shrubberies. Invite them by putting up small bird-houses, and furnishing them facilities for nesting. A half-gallon empty oyster keg turned down will attract the wrens, and in all the feathered family there is no more sociable singing and chattering summer companion.

That remarkable phenomena in natural science, the coal mountain in Pennsylvania, which has been on fire since 1837, will soon be extinguished, as the fire is approaching a point which can be submerged in water. A mass of coal has been consumed three-eighths of a mile long, 60 feet wide, 300 deep, and equal to 1,420,000 tuns of coal.—[Philadelphia Ledger.

A few days ago quite a curiosity was brought up from the bottom of the artesian well in Livingston, Ala. At a distance of 335 feet below the surface, and over 300 feet in the rock, an egg was found completely petrified, and perfect in shape save where the auger had defaced it a little.—[Ex.

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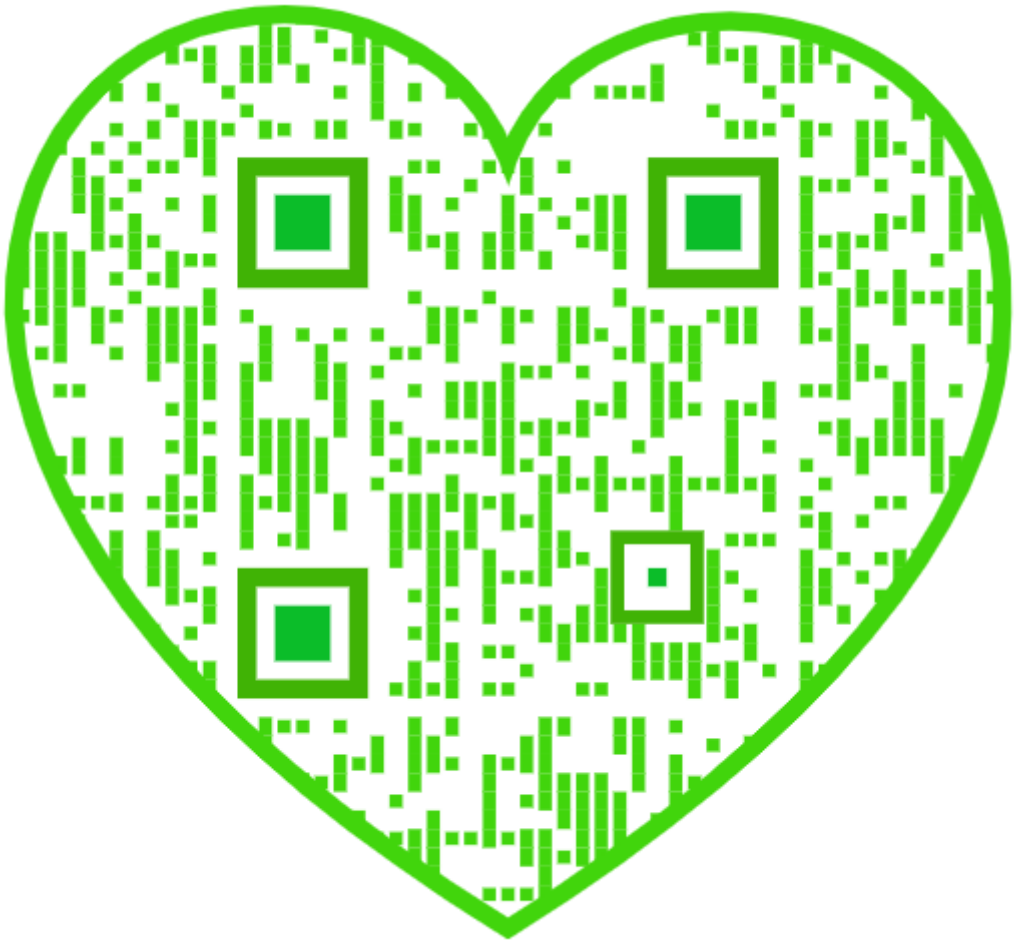

The Art of Dyeing—No. 16.

PURPLE ON WOOL—The process of woolen dyeing differs from the silk process in a very simple but very important point, viz., in boiling the former, whereas silk is never boiled. This is the grand and leading distinction between silk and woolen dyeing.

Common purple is dyed on woolen goods with logwood, muriate of tin, alum, and tartar—all boiled together in a clean copper kettle. About four pounds of logwood will dye ten pounds of wool; this requires six ounces of tartar, six of the muriate of tin, and three of alum. The logwood for purples should be boiled and left to settle for a few days, in a large cask before it is used. Dyers generally keep a large cask of boiled logwood always on hand. Two such casks should be kept in every dye-house, so as to fill up one and allow its contents to be settling while the other is being used. A brownish color is extracted from chip logwood, which injures the peculiar shade of purple. When the alum and tartar are dissolved in the kettle, the logwood liquor is put in, and suffered to boil for five minutes, when the goods are then entered and boiled for three-fourths of an hour, then lifted, washed and dried.

COCHINEAL PURPLE—This color is imparted to wool by dyeing it first a light red as described on page 146, then washing and bluing on the top with cudbear in a clean boiler, at a scalding heat—about two ounces of cudbear to the pound of goods. Urine or liquid ammonia is used in the boiler to extract the cudbear color, and impart it to the goods. This is a very rich and beautiful color.

Various shades of *puce* and *lavender* are dyed on wool, by dyeing the goods a cochineal red or pink, and bluing on the top with sulphate of indigo (chemic) in a clean vessel.

RUBY—This color may be dyed on wool with cudbear and ammonia. Two pounds of cudbear and a gill of aqua ammonia, will dye ten pounds of wool.

WINE COLOR, CHROME—By preparing woolen goods by boiling them in the bichromate of potash—two ounces to the pound of goods—then finishing in a clean kettle with half a pound of cudbear, and a very little logwood liquor, a good wine color will be produced.

The same process for dyeing wool will dye woolen yarn, worsted, cloth, and every fabric made of wool. Some authors on dyeing divide these kinds of goods into classes, and give different receipts (prescribing different substances.) This is all nonsense. The same stuffs will dye the same colors on all, but not with the same quantity of them, in this consists the difference. Wool requires about one-sixth more dye-stuffs than yarn, and nearly one half more than fine cloth. Coarse wool requires about one-fourth more dye stuffs than fine wool.

Purple, puce, ruby, &c., can be dyed on goods having a red *lac* base, as well as on those with a cochineal red base.

PEACHWOOD PURPLE—This color is dyed with peachwood, logwood, and alum. About half a pound of peachwood, two ounces of logwood, and one of alum, will dye a pound of wool. These are all boiled together, (goods and stuffs) for an hour. The old plan was to prepare the goods in an alum mordant first, then to dye in a clean kettle. This color can be blued down to a wine shade, with urine, in warm water.

CLARET COLOR—This is a deep purple inclining to a brownish shade. It is dyed by giving the goods about double the quantity of logwood, as the common purple, and adding one pound of peachwood for every ten pounds of goods.

CAMWOOD CLARET.—This color is dyed with camwood, by using about ten pounds of the camwood, to ten pounds of wool, and half a pound of logwood. It is darkened to the shade desired (after the goods have been boiled for an hour and lifted) with the sulphate of iron. Great care is required in the use of the iron, as the goods are liable to be spotted. To make the iron (usually called *saddening*) work level, a little sumac is added to the camwood, and the froth skimmed off the boiler, before the goods are entered. This color will stand exposure to the sun. None of the spirit clarets do this. The beautiful wine colored broadcloth which has been noticed to become of a greenish color by exposure, on the shoulders of gentleman's coats, is dyed by the process described above for *common purple*. No mordant is used for camwood claret. Every shade of claret can be dyed with redwood, logwood, and alum, at one dip. The redwood may be common hypernic or Brazil wood. It is difficult to give the exact weight of dye-stuffs for a particular shade of color because there is such a difference in the quality of dye stuffs, and in the quality of goods, all of which make a great difference to the dyer. All that can be said on this head, is to tell what stuffs, and *about* the quantities that will dye a certain color, and by using less or more of these stuffs, so will the shades be lighter or darker.

Influence of Inventions on Social Life.

The following is a condensed abstract of a recent lecture by James T. Brady, Esq., delivered before the Mechanics Institute, of this city, on the above subject. He began with an extract from a popular author, who complains that history has been more employed in recording the crimes of ambition and the ravages of conquerors, than preserving the remembrance of those who have improved science and the arts. He said it is melancholy to reflect that the great mechanics who constructed the mighty works which yet attest the power and taste of Egypt, Greece, and Rome, are nameless to their posterity.—Where men have improved in comfort and happiness, it has not been by the action of government, nor any peculiar capacity of race, so much as by their own struggles against unjust restraints. Yet no political change could greatly ameliorate their social condition. This improvement was reserved for mechanical genius and skill, which we should appreciate more than any other people. We are full of "notions," and especially inventive, and the consideration of this truth will prove more useful than many of our participations in the low strife of vulgar politics. Amongst the great inventions which affected man's general condition, was the invention of gunpowder, which deprived the castle tyrant of his former audacious sense of security, and equalized the conflict of peasant and prince. The grim ruins on the Rhine, and elsewhere, illustrate this fact. The poet or romancer may sigh over them, but they show where civilization made its progressive steps. That muskets still enslave even those who carry them, shows the wonderful influence of discipline and authority. But mechanism will one day enforce its deserved function, and free the millions of the Old World. Then mankind will not, as at present, in Russia, perish to settle the disputes of diplomatists, or the struggle for "balance of power."

Discovery has been the grand means of improvement. The mariner's compass led to many blessings, including the addition of this continent to the known world. Steam yielded its countless benefits. It has brought our States into close association and sympathy. Printing, "the greatest of the arts," gave society voice and tongue. It spread knowledge far and wide. The people are heard in the best of histories—the hourly record of all that is done, felt, or thought, throughout the globe. The newspaper is the library of the poorest. But invention has cheapened and multiplied books, so that the labors of the greatest minds are accessible to the millions. Thus the Scriptures reach all mankind.

The genius of mechanics has supplied the greatest wants of both rich and poor. The ancients were not acquainted with the sweet associations of the fireside, for their houses had no chimneys. The companionship of the clock cheers and guides the humblest, not as in the year 807, when the King of Persia presented one moved by water to Charlemagne, or Pope Paul sent one to King Pepin of France, in 756. The invention of clocks belongs to the Saracens, but they are not now what was said of the instrument made by Richard de Wallingford, in the fourteenth century—miracles, "not only of genius, but of excelling knowledge." All Europe responds to the tick of Yankee mannfacture. The daily laborer has a more comfortable home than sovereigns could boast of old.—Beckett's splendid style of living, A. D. 1160, was described in this, that his sumptuous apartments were every day in the winter strewn with clean straw and hay.

After enunciating many additions to our comforts, resulting from inventions, and referring to the brilliant cheerfulness of the gas which illumines modern streets, he said that there was a lesser light, whose direct social benefit would make even the former luster pale. Any one who remembers his sensations when he rose in the darkness of a cold night from a cosy bed, to strike a light with the patience-exhausting combination of flint, steel, and tinder, will be grateful for the beneficent inventor of lucifers and loco focos. He should have a grand monument. But mankind do not most honor those who shed light on the world. The victor whose deeds shroud a country in gloom, receives more applause. How beautiful too, is that discovery by which the blessed sunlight has been allured by genius to perpetuate the faces of dear friends; and the genial influence of that artist of God, fertilizing what it falls upon, keeps their memory ever green in our love. But there was a nobler view of the subject he had in hand. The triumphs of inventive talent have elevated the mechanic arts, and those who practice them. The artificer is welcome and honored in the associations of science. The labor of the hands has attained much dignity, and would receive more, but for a strange aversion to it, common even with us. The mechanic often sacrifices a son to obscurity in a profession for which he may not have aptitude or inclination. The eagerness to rush into the learned professions is fortunately receiving some check. To the genius, talent, and industry, which mechanically apply the powers of nature in developing her resources, and the achievement of useful mechanical results, we may confidently look for the distinctive superiority of our people. Excellence in contributing toward this reputation should be esteemed second to none. And we should learn to think lightly of the mind or heart of him who would not cheerfully turn away from the exploits of Cæsar, Hannibal, or Napoleon, to dwell with joy and emulation over the triumphs and the fame of Fulton, Whitney, and Morse. [Thus ended the lecture amid loud applause.]

MECHANICS—St. Paul was a mechanic—a maker of tents from goat's hair; and in the lecturer's opinion he was a model mechanic. He was not only a thorough workman at his trade, but was a scholar, a perfect master, not only of his native Hebrew, but of three foreign tongues, a knowledge of which he obtained by close application to study during his leisure hours, while serving his apprenticeship. It was a custom among the Jews to teach their sons some trade—a custom not confined to the poorer classes, but was also practiced by the wealthy; and it was a common proverb among them, that if a father did not teach his son a mechanical occupation, he taught him to steal. This custom was a wise one; and if the fathers of the present day would imitate their example their wrinkled cheeks would not so often blush for the helplessness, and not unfrequently criminal conduct of their offspring. Even if a father intended his son for one of the professions, it would be an incalculable benefit to that son to instruct him in some branch of mechanism. His education would not only be more complete and healthy, but he might at some future time, in case of failure in his profession, find his trade very convenient as a means of earning his bread; and he must necessarily be more competent in mechanical from his professional education. An educated mechanic was a model machine, while an uneducated mechanic was merely a mechanic working under the superintendence of another man's brain. Let the rich and the proud no longer look upon mechanism as degrading to him who adopts a branch of it as his calling. It is a noble calling—as noble as the indolence and activity of wealth is ignoble.—[Lecture by Rev. Dr. Adams.

Spare the Birds.

The swallows are the natural enemies of the swarming insects, living almost entirely upon them, taking their food upon the wing. The common martin devours great quantities of wasps, beetles, and goldsmiths. A single bird will devour five thousand butterflies in a week. The moral of this is that the husbandman should cultivate the society of swallows and martins about his land and outbuildings.

The sparrows and wrens feed upon the crawling insects which lurk within the buds, foliage, and flowers of plants. The wrens are pugnacious, and a little box in a cherry tree will soon be appropriated by them, and they will drive away other birds that feed upon the fruit, a hint that cherry growers should remember this spring and act upon.

The thrushes, blue birds, jays and crows, prey upon butterflies, grasshoppers, crickets, locusts, and the larger beetles. A single family of jays will consume 20,000 of these in a season of three months.

The woodpeckers are armed with a stout, long bill, to penetrate the wood of trees, where the borers deposit their larvæ. They live almost entirely upon these worms.

For the insects which come abroad only during the night, nature has provided a check in the nocturnal birds, of the whipporwill tribe and the little barn owl, which take their food upon the wing.

How wonderful is this provision of Providence for the restraint of the depredators that live upon the labors of man; and how careful we should be not to dispute that beneficial law of compensation by which all things are preserved in their just relations and proporions.—[American Agriculturist.

Cast-Iron Foot Pavement.

We learn by the *Journal of the Franklin Institute*, an extensive piece of cast-iron foot pavement has been laid down under the superintendence of Benj. Severson (a skillful mechanician) in Philadelphia. The pavement is made of cast-iron plates 12 feet long, 3 feet 4 inches wide, and $\frac{5}{8}$ inch thick; 12 feet being the width of the pavement to the curb. These plates are roughened on the surface by grooves $1\frac{1}{4}$ inch apart, crossing each other at an oblique angle, so as to divide the surface into diamonds.

A cast iron half inch plate, with its two edges turned at a right angle, so as to make flanges at the top and bottom, forming a girder 11 inches deep, is bolted to the columns of the building, making a support on which the inner ends of the plates rest. The curb is of cast-iron, $\frac{1}{2}$ inch thick, 11 inches deep, having a flange each side, at the bottom, and on the inside only at the top; it is made to slope slightly outward from the top to the bottom.

This curb rests upon a brick wall, forming the outside wall of the cellar, a good cement being interposed to make a water-tight joint; the pieces of curb have butt joints secured by a cast plate behind, riveted securely to both pieces, cement being interposed. From the building girder to the curb, and resting on the lower flange of each, stretch girders or joists, 12 feet long and 11 inches deep, 3 feet 4 inches apart, on which the pavement plates are laid and securely fastened by bolts or rivets, with counter-sunk heads, going through the flanges of the girder, the joists and the curb.

All the joints are carefully cemented so as to be water-tight; the transverse girders or joists are of half-inch cast-iron, strengthened on the bottom flange by wrought-iron flat bars, bolted to the cast-iron only at the two ends, and slightly expanded by heating when it is put on, so as to bring the lower part of the girder into a state of compression.

Hermetically Sealed.

We often find this expression used to indicate an air tight stuffing box; but it should never be employed except for expressing a closed joint made by melting the material of which the joint is composed, such as a glass tube being melted and then closed.

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(For the Scientific American.)

Theories of Electricity.

Although electricity has been extensively and advantageously applied to the arts, &c., &c., still only two theories have been laid down as guides, and which have been variously adopted by the students of that science.

Therefore the principles of electricity are understood in the present day nearly the same as they were in the time of Franklin and Dufay.

Little of a new character has been developed. Man, therefore, has hitherto been satisfied with former discoveries and former principles, in applying them to his own use and his own profit.

Franklin's Theory—That there exists, throughout all space, a subtle and exceedingly elastic fluid called the electric fluid, the peculiarity of which is that it is repulsive of its own particles, but attractive of the particles of other matter, that there is a specific quantity of this fluid which bodies are disposed to assume when in a natural condition, or state of equilibrium, and that if we communicate to them more than their natural quantity, they become positively electrified, or, if we take from them a portion of that which is natural to them, they become positively electrified.

Dufay's Theory.—That throughout all space there exists a universal medium called the electric fluid, of which the immediate properties are not known, but which is composed of two species or varieties of electricity, the vitreous and resinous, called also the positive and negative, that as respects itself, each of these electricities is repulsive, but attractive of the otherkind, and that when they co-exist in equal quantities in a body, it is in a neutral condition, or state of equilibrium, but if the positive or negative electricities are in excess, it is accordingly positively or negatively electrified.

Remarks—Here we will introduce a new theory, that shall be more in harmony with first principles. And for convenience we will use the word principle instead of fluid, this word being more in accordance with repulsion, attraction, gravitation, latent heat, force, affinity, &c., &c.

Quarterman's Theory.—That electricity is an elementary principle pervading all matter, that its varied phenomena are produced by the various physically constituted bodies in which it resides, actively and passively, and upon or through which it vibrates dynamically.

Action and Re action—To explain our theory fully is not our design at present, we will therefore only remark here that a principle acting upon an object is in return affected by the object upon which it acts, and vice versa. By examining the laws of affinity and repulsion, more light, however, may be thrown upon this subject.

Example—"If lime and magnesia be placed together, in contact with muriatic acid, the acid will dissolve the lime before it acts upon the magnesia; the affinity of lime for muriatic acid is, therefore, greater than that of magnesia for the same acid; hence, if to a solution of magnesia there be lime added, the magnesia will be expelled and the lime will take its place. If to this solution one of soda be added, the lime will separate, and soda may be expelled by adding potash.

When a solution of potash is exposed to the air, it absorbs carbonic acid and becomes dark colored; on adding acetic acid the carbonic acid is expelled, on adding nitric acid the acetic acid is expelled, &c., &c.—Kane."

"If to a solution of nitrate of silver a globule of mercury be added, it dissolves, and the silver is set free. By dipping into the solution of nitrate of mercury a slip of copper, the mercury is thrown down, and the copper takes its place. From the nitrate of copper the metal may be thrown down by lead, and the lead again be precipitated by a plate of zinc.—Kane."

Again, if we take the carbonate of soda and add to it acetic acid, the carbonic acid will be expelled, and a new compound will be formed, namely, the acetate of soda. Add to this muriatic acid, and the acetic acid is driven off, the muriate of soda being now the new compound formed. If to this we add nitric acid, the muriatic acid is expelled, and the nitrate of soda formed. Add sulphuric acid to this, and the nitric acid is driven off, the compound now formed being the sulphate of soda.

There are, therefore, five different compounds produced from one elementry substance, sodium, being acted upon by five different acids.

Thus we see that action and re-action produce wonderful results. And so on, through the great variety of nature, elementary bodies first combine, and these in their turn re-combine, as radical compounds, these also combine with other simple bodies and other compounds, the elements of which are similar, but the proportions of these elements differing only in their definite quantities. Thus light, heat, cold, magnetism, galvanism, &c., are the results of electricity acting upon certain media, certain bodies, certain constituted compounds, &c., in each case, presenting a different phenomenon.

Thus when Dufay excited electricity by friction on glass, and then by sealing wax, &c., he found the effects to be of different characters, and concluded, as a matter of course, that two separate fluids existed. Such a theory approximated to the truth, in a certain degree, and was calculated to illustrate many of the electric phenomena of that day.

Electricity, no doubt, is the first vital and material principle of nature. What is chemical affinity? What is repulsion? What is attraction of gravitation? What is vegetable life and animal motion? By what means does the blood circulate, and the heart pulsate? How are the functions of the brain, and the vibrations of thought performed?

Are they not effects produced by electricity, operating upon such differently constituted compounds, and being in its turn reacted upon also? Destroy the electric affinity of any compound, and then you separate its parts. All things in nature are governed by definite laws, and as men progress, so in proportion will those laws be developed.

Of positive and negative electricity we will have to speak in future.

In science, Truth is our motto.

James Quarterman.

In conclusion, allow me to state that to the Scientific American we owe an apology. It is now two years since we promised to that paper the above article, but from the pressure of business it has been neglected. I also take the liberty to state that I consider the Scientific American one of the best periodicals I have ever read. The information it contains is practical, authentic, and truthful. From the time of its first appearance I have read it with pleasure, and confess that from it I have acquired much valuable and useful information. I am not surprised that it should meet with unparalleled success, and be so extensively read by the most intelligent portion of the community on our own continent, as well as by those on the continents of the old world. J. Q.

114 John street, New York.

[So complimentary a letter from so respectable a source, we cannot forbear publishing, notwithstanding it may seem egotistical to do so.

(For the Scientific American.)

Rotten Muntz Metal.

I have been a constant reader of the Scientific American ever since it was published, and am warranted in offering an opinion on its merits. I believe it is the most valuable library for a mechanic that can be had for the cost; I would not be without it for any consideration.

I have read with great interest the articles which have recently appeared in its columns on the yellow or muntz metal, but I think that correct light has not yet been thrown on the subject. In my business as a brass-founder, I have had occasion to use some of this metal, and the inquiry has often been made of me, "what is the cause of this metal becoming so rotten after it has been in use for some time?" I have always given the answer that it contained too much zinc to form a chemical union with the copper, therefore the particles of copper and zinc become a galvanic battery when submerged in salt water, thus causing the destruction of the zinc by it becoming an oxyd and leaving the particles of copper without any solid metallic bond of union." I believe, that with a powerful microscope, the particles of copper and zinc may be seen separate and distinct, but I have not one to make a proper examination.

I do not know any remedy to suggest, excepting that of making experiments to discover the exact atomatic quantity of zinc that will unite chemically with copper.

I hereby send you a piece of a sheet of yellow metal that had been in use as sheathing on a vessel in the West India trade, for about three months; you will perceive that it is very brittle. The nails that were used in fastening this sheet,—composed of 5 parts zinc, 10 of copper, and about 1-4 part of lead, retain their toughness. I am told there is no difference in the metal made by different manufacturers, and that the American and English kinds have the same fault. I have had in our docks, for the last year, a piece of 3-8 rod of Muntz metal, one of copper, a piece of sheet yellow metal, and a piece of sheet copper, to try which will endure the longest, and I will write and inform you of the result. Any information on this subject will be received gladly by a large class of mechanics. It is a subject of vast importance to our country, as a vast amount of this metal is now in use.

James. W. Lyon.

Newport, R. I., April 2nd, 1855.

[The piece of metal which our correspondent has sent us is perfectly rotten.

White Printing.

Messrs. Editors—As various efforts are now being made to discover a substitute for rags in the manufacture of white printing paper, I would suggest, that black paper with white letters be used instead of the present method. There would be no difficulty, I imagine, in obtaining any quantity of material for the manufacture of paper of the latter shade, a dark green, blue, or brown.

You are, doubtless, well aware that a signboard painted with white letters on a black ground, can be read at a greater distance, and far more distinctly, than when the letters are black upon a white ground, for the simple reason that, in the first instance, the letter alone is reflected to the eye, and is a positive picture, while in the latter instance, the ground is reflected, and the negative portion, or that which we do not see, serves to form the letter. In the one instance the outlines of the letters are distinct and sharp, and in the other indefinite and variable, by the intervening rays of light which emanate from the surrounding surface. Thus, while reading a newspaper, we do not see the letters, but only the spaces around them.

Now, upon the other hand, if newspapers were printed upon black paper with white ink, the eye would be relieved from the glare of rays reflected from the white surface, while the letter only would be transmitted to the eye.

By this arrangement it would become necessary to execute wood engravings upon the same principle of copper plates, viz: raising the lights and cutting in the shades; which, by the by, would materially lessen their cost, by rendering their execution easier. And then again, I can see no reason why copper-plate engravings might not be used in illustrating the daily or weekly newspaper.

To put a paper in mourning, the Chinese custom would have to be substituted for European, to wit: white instead of black.

This plan would certainly be greatly beneficial to the eyes, and with the aged and near-sighted would doubtless be deemed a great desideratum. Pacific.

San Francisco, Cal., March 1st, 1855.

[Copper plate engravings would be rather expensive for illustrating daily and weekly papers. Copper faced plates, prepared by electrotyping, are now in common use.—[Ed.

3,500,000 bushels of wheat were raised in California last year.

Rule for calculating the weight of a casting from the weight of its pattern.

It is evident that the weight of a casting stands in the same porportion to the weight of its pattern as the specific gravity of the former to that of the latter, allowing, at the same time, for the shrinking, i. e. contracting of the casting in cooling. The following data are taken from an article of Professor Karmarsch.

Average specific gravity of materials used for patterns: Pine wood, 0·500; oak, 0·785; beech, 0·721; pear tree, 0·689; birch, 0·664; alder, 0·551; mahogany, 0·600; brass, 8·300; zinc, 7·000; tin (3 to 4 tin 1 lead) 7·900; lead, 11·000; cast-iron, 7·250. Compositions, red metal (10 to 15 p. c. zinc,) 8·600; bronze (copper, tin, and zinc, zinc and tin together 15 to 20 p. c.,) 8·450; bell-metal (zinc and tin 20 to 25 p. c.,) 8·900; cannon-metal (tin 5 to 12 p. c.,)8·760.

The shrinking or contracting in cooling, is:

for brass,	1 from 21
for bronze,	1 from 26
for zinc,	1 from 27
for cast-iron,	1 from 32
for cannon metal,	1 from 40

This means that 21 cubic inches of melted fluid brass, will, after cooling, occupy only 20 cubic inches.

If s is the specific gravity of the pattern, S specific gravity of the casting, a the ratio of shrinking, P weight of the pattern, and C the weight of the casting, the rule is:

$$C = \frac{P\ S\ (a-1)}{s.\ a}$$

The following table gives the numbers with which the weight of the pattern is to be multiplied to obtain the weight of the casting nearly:

The pattern made of	The casting made of cast-iron.	brass.	red metal.	bronze.	bell-metal.	cannon-metal.	zinc.
Pinewood,	14·0	15·8	16·7	16·3	17·0	17·1	13·5
Oak,	9·0	10·1	10·4	10·3	10·8	10·9	8·6
Beech,	9·7	10·9	11.4	11·3	11·8	11·6	9·4
Pear Tree,	10·2	11·5	11·9	11·8	12·3	12·4	9·8
Birch,	10·6	11·9	12·3	12 2	12·8	12·9	10·2
Alder,	12·8	14·3	14·9	14.7	15·4	15·5	12·2
Mahogany,	11·7	13·2	13·7	13·5	14·1	14·2	11·2
Brass,	0·84	0·95	0·99	0·98	1·02	1·03	0·81
Zinc,	1·00	1·13	1·17	1·16	1·21	1·22	0·96
Tin,	0·89	1·00	1·03	1·03	1·07	1·08	0·85
Lead,	0·64	0·72	0·74	0·74	0·77	0·78	0·61
Cast-iron,	0·97	1·09	1·13	1·12	1·17	1·18	0·93

If you wish to know the weight of a casting in brass from a pinewood pattern, weigh the pattern, say 3 ounces, and multiply by 15·8×3=47·4 ounces; if cast in iron, 14·0×3=42 oz. A. Z.

Baltimore, March, 1855.

Climatising Animals and Plants.

The London *Literary Gazette* advises to establish an Acclimating Society in England like the one in France. The object is to introduce and naturalize useful plants and animals of other countries. France, through its Society, has come into possession of the yaks of Thibet, which combine the utility of the cow, the ass, and the sheep; of certain species of fish peculiar to Germany and Switzerland; of silkworms from Piedmont; of goats from Algeria; of nutritious tubers and plants from South America, &c., &c. In a recent sitting, strong recommendations were made that ths ass of Arabia, which, in addition to the qualities of the European ass, possesses speed; the ewes of Arabia, which feed on little, and give abundant milk; the sheep of the Kollo, which produce a vast quantity of wool; and the zebra, shall be naturalized in Western Europe.

Such a Society in our country might do a great deal of good.

Primitive Fossils.

A ridiculous story is going the rounds of our papers credited to the Cincinnati *Columbian*, of two fossil human bodies being discovered in Pennsylvania, part of them being sand stone, and the head of the male "composed of quartz and gneiss," and other primitive rock. The article displays such an amount of ignorance respecting geology, that we must tell the *Columbian* to acquire more knowledge before it attempts another tale relating to a question of science. It says, the head is composed of quartz and gneiss, whereas the latter is a composite rock, and quartz is one of its constituents.

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New Inventions.

Improvement in Rotary Pumps.

The annexed engravings are views of an improvement in rotary pumps, for which a patent was granted to Stephen D. Carpenter, of Madison—proprietor of the *Patriot*—Wisconsin, on the 10th of last October. Fig. 1 represents the pump on the top of a well. A is the globular shell. B is the cap containing the air chamber. C are the flanges to bolt the cap to the globular shell. D is a stuffing box, which is forced up close with a screw cut to the shell. E is the shank of the shaft, which is rotated by the crank handle. F is the discharge pipe; G is the suction pipe, and a set screw forces the cone up to the cap. To screw this up to its cap, is all that is required to keep the pump in order until it wears out. I is an ornamental top, and J is the top of the well curb and platform. K is the pedestal to support the pump on its bed plate, which is bolted to the platform of the well.

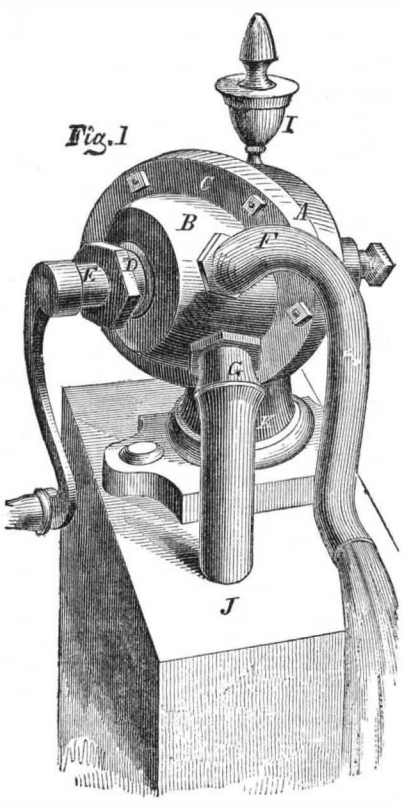
Fig. 2 is a vertical section of a well with the pump placed near the water, and it may be thus worked at any depth below the surface of the ground. L is a frame on the top of the well, to support the crank shaft, M, and bevel pinion, N. O is the pump shaft, with a bevel wheel, N, on it. This shaft may be of wood, with iron couplings and bearings. P is the discharge pipe. Q is the wall of the well. R is the pump case. S the suction pipe. T a plank support, or platform for the pump. U is the water in the well.

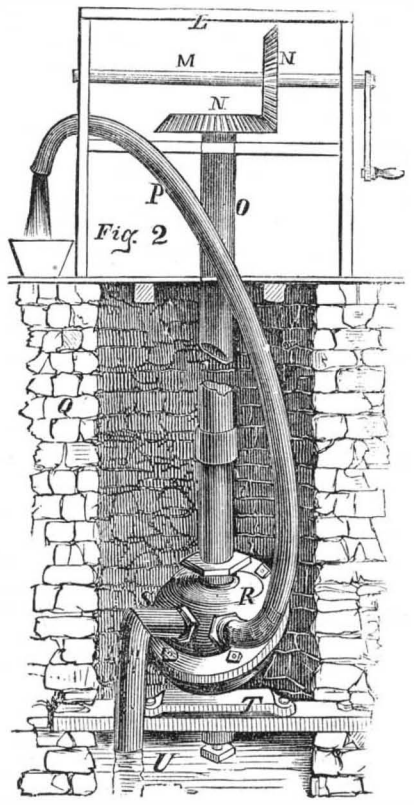
Fig. 3 is a horizontal section of the pump, showing various parts; fig. 4 is a detailed view of the propelling blades or piston, and fig. 5 is a vertical section of the cap of the pump. The outside curved dotted lines, fig. 3, is a diagonally spherical shaped shell. B is a cap bolted to the shell, and enclosing it air tight. C is an air chamber set in the case. D is a partition running midway between the orifices of reception, (E F, fig. 5,) and discharge toward the center of the cap, closing it in near the center. V V are the journals of the rotary shaft, which is globular at one end and conical at the other. A chambered slot is made in this shaft, through the conical end. Another slot is represented by dotted lines to cross this one at right angles, so that when the fan piston or propeller is inserted in its place, through the first described slot, the bar, H, may be driven through its slot to fit it, and come in contact with the boss of the fan at L, so as to prevent the passage of air or water through the body of the shaft. On the outside of the spherical shell and its cap, are flanges, J, for bolting the pump to a frame. The pump may be made of iron, or any other metal.—The inside of the cap, B B', fig. 3, is bored out perfectly smooth, and so is the spherical shell at the points, K K. The shaft is also turned and polished when it comes in contact with the shell at K K. Fig. 4 represents the fan shaped piston or propeller. A A shows its flat surface. This piston or propeller is made to fit closely, and work in the slot in a circle. The propeller or piston vibrates on a pin, Z, passing through the shaft and the center of the boss. A^2, fig. 4, is its longest edge; it is rounded and polished to fit close, so as to work in its chamber air and water tight, between it and the inside surface of the cap. *m m* are the bearings for the shaft. The polished surface of the cone is continually in contact with the inner surface of the cap, between the parts, N N. The boss of the fan propeller has its radius less at O than L, and bears closely on the shank at G, and on the bar at H, and makes a close fit to prevent the passage of air and water. The cap is fitted on over all the machinery, and bolted with packing, perfectly air tight. The journals are packed at P P, and forced close by screws, Q Q, so as to make all air tight. The machine is turned in the direction of the arrows, fig. 5, to draw and discharge, and by reversal, it—the water in the pipe—can be driven back to the cistern, so that this pump will not freeze. B & X, fig. 5, show the opening for the ingress and egress of the water. C in the same chamber shows the position and extent of the air chamber. By making all the interior contact surfaces very smooth, this pump may be employed as an air pump.

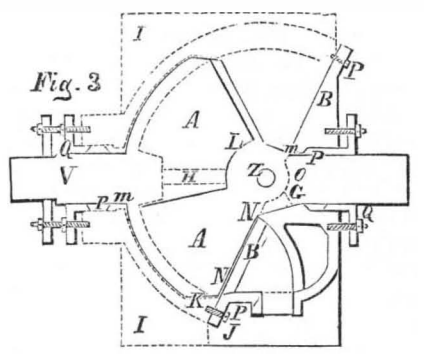
It is a force and suction pump, and is capable of forcing water to any hight, according to the power applied to work it.—It contains no valves, and can be used for forcing water into steam boilers; for extinguishing fires; for lifting water, and for every other useful purpose to which pumps are applied. One of these pumps, ten inches in diameter, is employed on the Madison and Milwaukie Railroad, at Milton, Wisconsin, and is driven by a windmill. With a good breeze, it fills two tanks holding 24,000 gallons of water, in 2½ hours, and this water has to be raised 75 feet. It is a simple and strong pump, not easily injured, and is very durable. For a great number of our railroads it appears to be such a pump as is wanted.

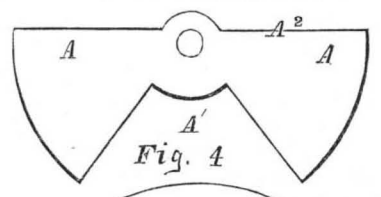
More information may be obtained by letter addressed to Mr. Carpenter.

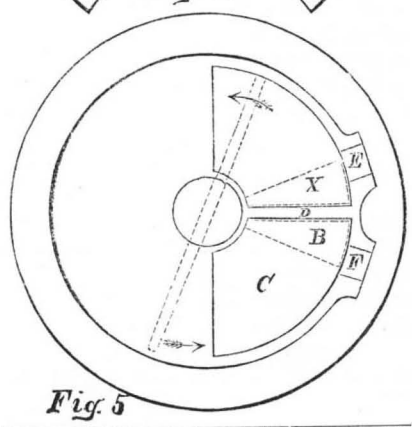
CARPENTER'S UNIVERSAL ROTARY PUMP.











Endless Chain Pump.

The patent granted this week to Arcalous Wyckoff, of Columbus, Ohio, for an improvement on endless chain pumps, embraces providing an elastic valve within the cylinder at a point just above the level of the water in the well, and allows the elevators to pass through it upwards, but not downwards, even though the chain should be suddenly stopped, and thus prevent any water returning to the well.

Hand Corn Planter.

The patent granted this week to C. B. and B. S. Borden, and Aaron R. McLean, of West Dresden, N. Y., for improvements in corn and seed planters, relates to the hand implement for this purpose, and is very simple. It consists in attaching to the handle of an ordinary hoe a seed box of sheet metal connected with devices whereby, when the operator makes a hole in the ground for the seed in the usual way, by a pressure of the hand, the seed—exact in quantity—flow down into the hole, and are then covered by a backward movement of the hoe.

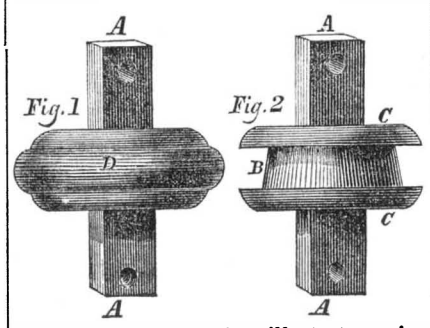
Dumb Waiters.

These apparatuses are hoisting platforms generally used in hotels, &c., to carry up and let down by a vertical passage from story to story, loads of china, eatables, &c. The improvement on this class of machines for which a patent has been granted this week to Andrew Murtagh, of this city has for its object a more perfect control of the platform or dumb waiter by the attendant, and greater convenience and ease in its management, so as to render its action steady and safe at all times. The dumb waiters heretofore used have been so arranged and operated that they were difficult to work and manage. The combination of parts embraced in Mr. Murtaugh's claim on another page remedies these evils, as they render the dumb waiters direct acting, by a crank without intermediate gearing of the windlass character.

Steam Engine Valve.

The claims in this week's list embraced in the patent granted to Thomas Goodrum, of Providence, R. I., cover improvements consisting of a hollow cylindrical or conical valve of novel construction, which receives a rotary motion corresponding with that of the engine shaft, and can control the induction and eduction of steam to and from one or more cylinders. A device is also attached to this rotating valve, making it a variable cut-off. This valve can also be arranged in such a manner that the steam passages leading from it to the cylinder, may be shortened to the greatest degree possible.

Morris' Improved Bucket for Chain Pumps.



The annexed engravings illustrate an improvement in the bucket for the common chain pump, patented by Edmund Morris, of Trenton, N. J., January 3, 1855. This bucket makes an entire change in the chain pump, altering it from a mere lift pump, which loses its water the moment you cease to turn the crank, into a suction pump, that retains the water, and which a single turn of the crank will cause to discharge at the nozzle. Its construction is extremely simple, while its cost is probably no more than the ordinary iron disk, as, no matter how deep the well, only two of these buckets are required to be in the log at the same time, while the iron disks occur every few inches. These numerous disks being dispensed with, the chain is therefore much lighter.

Figure 1 is an iron casting having a shank at A, at each end, by which to rivet it to the chain. It is supplied with two flanches, C C, of equal diameter, and these flanches are connected by a cone, B. A ring (1½ inches in outside diameter) of india rubber, D, figure 2, is stretched over one of the flanches on to the cone, and fills up the space between them, or very nearly so, as seen in figure 2. This figure represents the bucket complete. It must be remembered that the flanches, where they join the cone, are hollowed out, so that the ring, when compressed by the passage up the pump log, can partially contract itself into this hollow space, from which it escapes as soon as the bucket emerges from the log, and recovers its original elasticity. The bucket also, when ascending the log, will force the ring down to the base or thickest part of the cone, thus causing a very trifling amount of expansion of its diameter, or just enough to make a perfect air-tight fit, and a consequent vacuum, like the piston of a syringe. As the upper bucket escapes from the log, another one should enter at the bottom. Water is the lubricator for gum, as oil is for metal; there is, consequently, a very small amount of friction.

This bucket possesses the merit of not wearing out the log, nor itself. They will last many years, and should the rings, from any cause, require renewing, a new set can be put on in five minutes. All the old pumps now in use can have the old buckets replaced with these, the same gearing answering in both cases. The bucket which is to receive the ring can be cast at any country foundry, and the patentee can furnish the rings at a very small price. No change of weather affects the elasticity of the rings, as the gum is vulcanized expressly for the purpose. It would be difficult to construct a pump which would work more accurately.

Particulars may be learned by addressing the patentee.

Plow Improvement.

The claim on another page for a patent to Noah Warlick, of Lafayette, Ala., for an improvement in plows, is designed for increasing their strength without adding to their weight, so as to make them better adapted for operating in rough, stony, and rooty lands. It has a Y-shaped brace, with its point to bear on the ground when required, and to give support to the plow, and enable it to be used as a crowbar or lever with safety, for prying up stones, stumps, roots, &c.

Excavators.

The patent of C. Williams, of Jackson, Tenn., whose claim is in this week's list, relates to the lever scoop excavators. The shaft to which the scoop is attached works upon an upright pole, and is allowed to rotate and work between friction rollers on the pole. This machine can be constructed cheaply and has some excellent points of novelty.

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Scientific American.

NEW YORK, APRIL 14, 1855.

The Canals and Railroads of New York.

We are indebted to the State Engineer—John T. Clark—for a copy of his annual report on the canals, for 1854, and find much therein to interest and instruct. The first railroad constructed in this State—it is therein stated—was the one between Albany and Schenectady, fifteen miles long, which was projected in 1826, and completed in 1830. It does not state who was the engineer of it, but we understand it was Peter Fleming, who surveyed and laid out the upper part of New York City. The progress of railroads was somewhat slow, it appears, after the first one was built, for the Central line through the State was not completed until 1843. At present we have two State lines of railroads, the Central, and the New York and Erie, and it seems they have injured the canal freight trade (a little) during the past year. In order to increase the revenue of the State, it has been proposed by the Governor to levy a tax on railroad frieght, in order to make up the deficiency of loss from canal revenues; in other words, to make the railroads pay the rent of the canal. Mr. Clark, we are glad to see, points out the absurdity and foolishness of such a proposal. It would tend to injure the commerce of New York, and divert it into other channels. We find it stated in this report, that there is a mile of canals and railroads in New York for ev-every three miles square of territory in the State. Mr. Clark advocates the early completion of the Erie canal enlargement; and in this he is right. It is a most absurd policy to have a little bit *here*, and another bit *there*, of this work completed, and not the whole of it, when all of it, as a whole, is required to be enlarged before its benefits can be experienced.

It cannot be disguised, however, that a large portion of the interior carrying trade of New York, from the great West, now goes through by the completed Pennsylvania lines of railroad; and down through Lake Ontario. Merchandise will go by the most favorable and economical routes—nothing can prevent this. The only way to increase the commerce of any country, is to increase its facilities for the cheap transport of merchandise.

The New City Hall.

We hope our city fathers will decide upon having this building constructed of cast-iron. The material is fire-proof, is stronger than marble or granite, and will endure for thousands of years. It is also capable, in any edifice, of being ornamented in the most elaborate manner, at a very small expense. We look upon cast-iron in its application to architecture as one of the grandest discoveries of this iron, steam, and lightning age. Tasteful ornament is *beautiful*, independent of its cost, be it cheap or expensive. If then a building can be erected of cast-iron, and ornamented with the finest architectural designs for one tithe the expense for which it could be executed with carved stone, it should be a strong inducement to its general use in buildings; its adoption certainly tends to elevate the public taste. The blockading of the streets of New York with piles of brick and mortar for new buildings, is a perfect nuisance. All this is avoided by the use of cast-iron. The several parts or castings of iron structures can be put up so rapidly that the public is never disturbed by street obstructions attending their erection. Several of the cast-iron buildings recently erected in our city are a credit to it, more especially the new one of the Messrs. Harpers, the publishers, in Pearl street. It is not quite completed yet, but even as it is, it is worth going a thousand miles to see, and when fully completed we shall have something more to say about it.

As cast iron has recently fallen in price, the New City Hall can be built of this material for at least twenty thousand dollars less than it could have been two years ago.

Curious Electrical Phenomena.

The Eaton *Democrat* (Mich.) of the 26th ult., has come to us marked around, the letter of a correspondent, who describes a peculiar phenomenon which he witnessed during a snowstorm on the 11th of last month, at about half-past eight o'clock in the evening, when at the house of his brother in Tuscola, Livingston County. His brother, while crossing the street, beheld streams of light like electricity issuing from his fingers, and on attempting to brush them off, they began to issue from his clothes and his hair. He then called upon the writer to come out and see it, who did so, and found himself also enveloped in light, when he approached him; he was literally covered with small flames, resembling a multitude of minute candles. He says: "We stood in the middle of the street, the storm pelting us in its coldest fury, the night as dark as Egypt, and we presenting the imposing appearance of lamp-posts illuminated by a hundred burning tapers.

One characteristic of the phenomenon was rather singular. Although we were nearly all in a blaze, or at least nearly covered with a multitude of small blazes, yet they did not reflect the least light, nor were they in the least affected by the wind. We called the family out to see the sight, and the lights immediately appeared on them, but in a far less degree of brilliancy than they did on us. The appearance was beautiful indeed, and with its soft, gentle, phosphorescent flickering, contrasted beautifully with the thick darkness of the night, and the hoarse moaning of the elements lashed into fury by the madness of the storm."

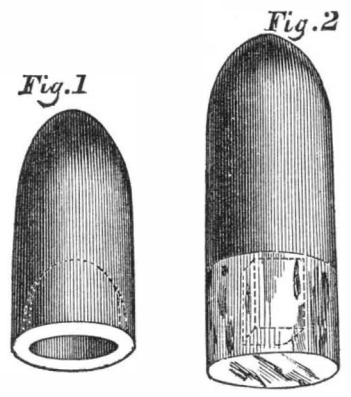
This is the second notice of a like phenomenon observed during the past winter.—The other case is that related by H. Ware, of Cambridge, Mass., in a letter to Prof. Silliman, and published on page 273, last number of Silliman's *Journal*. The night on which it was witnessed was the 17th December last, while he was walking along the long bridge between Boston and Cambridge. His attention was attracted to the iron lamp posts on the bridge by a loud hissing noise, and by several sharp pricks on his forehead, and on raising his hand to remove his felt hat, he beheld a brilliant discharge of electric sparks when his fingers touched its rim. He then looked to the lamp posts, and saw long streams of electric light streaming out from every point of them, although the lamps were not lighted. This was during a snow storm, and the wind blowing very strong, as was the case at Eaton.

Guano.

It is only fifteen years since guano was first used in Europe, and since 1840, when only a few tuns were used by way of experiment, its consumption has increased up to nearly 100,000 tuns per annum. In our own country the demands for it were so numerous last year that they could not be supplied. From the great and insatiable demand for this manure it has been subject to the most glaring adulterations by mixing it with loam of the same color as the guano itself. Farmers should therefore purchase it of respectable and well-known dealers. The best quality of this fertilizer is the Peruvian. From the large amount of ammonia and phosphates contained in this kind of guano, together with the almost inexhaustible supply, and the circumstances attending its origin, collection, and importation, the farmer can more implicitly rely upon it for fertilizing his fields than on any other. Being the production of a climate where rain seldom or never falls, its composition becomes less altered, and its character less varied, except in color, than those varieties found further north or south.

Guano, like farm-yard manure, may be applied with advantage to almost any kind of soil, as well as to most of our cultivated crops, as it contains every element necessary to their growth, independent of the quality of the soil—one great point being attended to—that the land be in good tilth; for otherwise, the tender roots of the vegetables would meet with obstruction, and become crippled in their growth. Poor well-tilled soils receive the most advantage from this fertilizer, as they are most generally deficient in some essentials necessary to the growth and perfection of plants, which guano supplies.

New Rifle Bullets.



The annexed figures represent two new bullets for rifles. Figure 1 is a bullet with a hollow chamber in its butt, to make the charge of powder expand it and fill up the grooves in a rifle; figure 2 is a bullet with a *sabot* or shoe of cork, on its butt, for a rifled cannon. Figure 1 is a view taken from a figure in the account of Lieut. Col. Beamish of the experiments of Capt. Norton (of Cork, Ireland) with projectiles. Figure 2 is taken from a model ball sent us by Capt. N. himself, who says it is also well adapted for Sharp's breech-loading rifle. The chambered bullet is designed to supersede the Minie ball for quick loading from the muzzle. Figure 2 is cast with a square shoulder on its butt (see dotted lines) and over this is secured the *sabot* of cork. This cork *sabot* will expand with the charge, and fill the grooves of the rifle, preventing windage, and and at the same time give the ball a spinning motion on its horizontal axis. It appears to us to be a more simple and better bullet for long use than the Minie ball. Capt. Norton has also used bolts for cannon like those of the old Genoese cross-bows, only his *sabot* was of lead secured on the end, by which means a cast-iron bolt can be made to fit into a rifled cannon, and receive a spinning motion by the lead being forced into the grooves, thus avoiding the dangerous grinding action by the cast-iron bullets in the spiral grooves of the Lancaster gun. On our claim page, this week, it will be noticed that a patent has been granted to Luther Houghton, of Philadelphia, for an improvement in loading rifled cannon, in which the *sabot* is mentioned. Our readers will understand what this means by our illustration. With a *sabot*, a conical cast-iron bullet might be used in a common rifle, and it would be able to pierce through a plate of pretty thick iron. Capt. Norton in his experiments found this to be the case. We have no doubt but a conical bullet with a lead *sabot* may be safely used in a rifled cannon, and with excellent effect. A few weeks since J. W. Cochrane, of this city, whose crushing machine was published on page 364, Vol. 7, SCIENTIFIC AMERICAN, exhibited to us some peculiarly formed bullets with hollow spiralled butts, which had been experimented with in the common plain bored muskets, and which gave them the quality of the rifle, by the spinning motion given to the ball. The same effect was produced on such shot—we were assured—in a plain bored cannon, with his cast-iron bullet. If the same character of motion as that given to a ball by a rifle can be given to a bullet—owing to its peculiar form—in a plain bored barrel, the invention must be of great importance, as it will enable the smooth bored musket, which can be bored at much less expense than a rifle, to rival that peerless arms, for correct shooting. We have not witnessed any of the experiments ourselves, but we have been given to understand that some successful experiments have been made at Washington.

Boston Water.

We have received the Report of the Cochituate Water Board, of Boston, for 1854, in which it is stated—and we are very glad to hear of it—that the offensive taste of the water has entirely disappeared. The improvement in the taste, however, was longer in taking place than was expected. It commenced about the first of January, and went on increasing until February, at which period the water at the lake had acquired its former purity. In this Report Prof. Horsford has added to his previous one and has done so in a candid and creditable manner. Some difference of opinion has been expressed by the scientific men of Boston on this subject. We incline to the opinion that Dr. Hays has discovered the true cause—aquatic crustacea—but aquatic vegetable organisms, no doubt, as stated by Prof. Horsford, prevailed to a great extent last year, owing to the long and severe drought, and Dr. Jackson's chemical analysis is also proof positive of this. The people of Boston must not relax their efforts to prevent the evil occurring again.

To Inventors Only—Models.

Almost daily we are in receipt of models on which the inventors have omitted to place their names. It is very annoying to us to have our shelves and counters filled with models which we are often unable to decypher the use of, or know whom to address for information concerning them, and we do wish inventors would be more regardful of our feelings, and at the same time their own interests, by placing their names and place of residence upon some part of every model they send to us. Inventors should not think that because they have recently written us that they had invented a machine for such and such a purpose, and got a reply, that if they would send a model we could decide upon its merits and patentability better than from their description, when the model comes we should remember *who* wrote about it. We care not how many models are sent us for examination—the more the better—but don't forget to put the inventors' names upon them, and withal never forget to pre-pay the express charge, or otherwise provide for its payment by remitting the probable expense, by mail. There are a number of *nameless* models which have come to this office within a week, which the inventors no doubt are looking for an acknowledgement of through the columns of this week's paper, and no doubt will write us in a petulant manner, inquiring why they have not heard from their models which were sent to us a week or two ago. Gentlemen, bear this in mind—"place your names upon your models, accompanied with descriptions, (if not previously sent) pre-pay express charges, and your requests shall be promptly attended to."

Provision and Fruit Preservation.

John C. Schooley, of Cincinnati, Ohio, obtained a patent on the 13th of last month, entitled a new process of curing meat. The object of this invention is the maintaining of a dry atmosphere in summer, in an apartment cooled by ice, so as to enable him to cure pork, beef, &c., during the summer as well as during the winter months. He has ascertained, he informs us, by actual experiment on a large scale, that hogs and beef cattle can be killed, and the meat cured in summer, with nearly equal success as in the best winter weather. His plan is, to pass the air for his building over the surface of ice, which thus reduces its temperature, and makes it deposit its moisture before it enters the curing room. He commenced operations in April, last year, and cured $15,000 worth of pork, hams and shoulders, with only a loss of about seven per cent. The temperature in the curing room ranged at from 39° to 48°, when it was from 90° to 95° in the shade outside. The chamber was entirely free from moisture and impure air, whilst in all other places heretofore used for summer curing, the curing chamber was always dripping with drops of water hanging to the ceiling or running down the sides of the apartment, creating an impure atmosphere, and the result of curing in this moist air was disastrous, showing a loss in spoiled meat of not less than 20 to 40 per cent., or even amounting to 60 per cent., which has heretofore prevented the summer curing process from being of any commercial value.

His plan is now in full operation at No. 359 Plum street, Cincinnati, where it may be examined by all those interested in the preserving of both meats and fruits.

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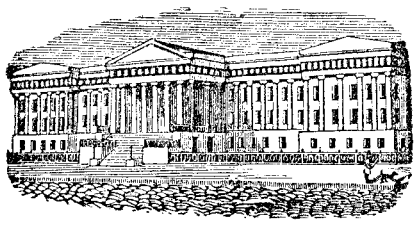

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING APRIL 4, 1855.

FACTITIOUS OILS—H. W. Adams, of New York City: I am aware that animal and vegetable oils have been mixed together and used for lubricating, painting, tanning, and burning purposes, I therefore claim no such mixtures; but crude turpentine is not an oil, and therefore its mixture with fixed oils is a new composition of matter.

But I claim the use of crude turpentine in a mixture made with it and the fixed oils, in the manner and for the purposes substantially set forth.

PRESSES—James P. Arnold, of Louisville, Ky.: I am aware that conical pulleys and a traveling belt thereon have been used for various purposes where speed and power are required at variable stages. These I do not claim.

But I claim operating the shipper that moves the belt along the cones by the descent of the platen whilst pressing, so that the power shall be increased with the resistance, until the material is pressed, and then allowing the shipper to run back at an increased velocity when the bale is ready to be removed, substantially as described.

MANUFACTURE OF WHITE LEAD BY PRECIPITATION—Richard Baker, of Newark, N. J.: I claim an improvement in the combination of apparatus, so arranged and constructed as to produce carbonate of lead by precipitation more expeditiously and economically than by any other arrangement heretofore used for the same purpose.

I do not claim each and every part of the apparatus described as new.

I claim connecting with an air pump a series of vertical distribution pipes, o o o, as described, consisting of a great many in number, descending vertically from the main horizontal pipe, O, and passing down through the head of the precipitating vessel, D, into the solution of sub-acetate of lead, 1 pipe at least through each square foot of surface of the top of the precipitating vessel, thereby traversing the solution with a great number of small jets or blasts of carbonic acid gas, causing a very rapid decomposition of the solution, as the vertical pipes cannot choke up with the ponderous precipitate, a constant blast from each pipe is thereby insured.

LUBRICATING PISTONS OF AIR PUMPS—Abel Barker, of Honesdale, Pa.: I claim the transference of the lubricating oil from the bottom of the engine cylinder to the upper side of the piston thereof, for the purpose of insuring the proper lubrication of said piston, substantially as set forth.

SEED PLANTERS—C. B. Borden, B. S. Borden, and A. R. McLean, of West Dresden, N. Y.: We claim attaching to the handle of an ordinary hoe, a chamber or box, B, which contains the corn or seed to be planted, said chamber or box being provided with a slide, D, having a slot or recess, h, in its lower end, which slot or recess may be increased or diminished in size by adjusting the small slide, E.

The slide, D, being arranged as shown, so as to be operated by the finger of the operator, and the spiral spring, H, for the purpose of depositing the seed or corn in the holes or furrows in the earth made by the hoe, as shown and described.

[A brief description of this seed planter may be found on another page.]

CONDENSERS FOR STEAM ENGINES—Louis Bollman, of New York City: I claim, first, the method described of controlling the injection of cold water into the condenser by connecting the injection cock or valve with a piston, E, or its equivalent, which is exposed on one side to the pressure of the atmosphere, and on the other to the pressure within the condenser, and is acted upon substantially as set forth, by variations in the pressure in the condenser, so as to increase or diminish the injection, as the said pressure diminishes or increases, and to stop the injection when the desired vacuum is obtained.

Second, the employment, substantially as described, for the purpose of heating a sufficient quantity of water to supply the boiler to a higher temperature than the water delivered by the air pump, of an additional injection pipe, P, to inject the said quantity of water at the commencement of eduction into the eduction pipe or passage, the cylinder or any convenient place near the entrance to the condenser, combined with a receiver, Q, which is arranged in any way substantially as described, and furnished with any suitable means, substantially as described, of opening it at the commencement of eduction and injection to receive the said water, and of shutting it off from the condenser, before the temperature of the latter is too much reduced.

[See description of this useful invention in No. 15 present volume SCI. AM.]

SHIPS' RIDING BITS—Thos. Brown, of London, Eng.: I claim the tubular metallic riding bits, when entirely secured to a single deck of a vessel, and arranged substantially in the manner and for the purpose set forth.

ADJUSTABLE PADDLE WHEEL—L. M. Dehart, of Reading, Pa.: I am aware that reefing buckets on paddle wheels have been used; and that an expanding propeller has also been essayed, in which the wings have been drawn towards the center or run out by means of racks and pinions: these I do not claim.

But I claim, in combination with the hollow arms permanently fixed to the hub, the arms carrying the sections of the buckets, when said arms are so arranged as to be slid within the hollow arms by a rack and pinion, or its equivalent, substantially in the manner and for the purpose set forth.

ANCHORS—R. V. De Guinon, of Brooklyn, N. Y.: I do not claim fitting an anchor so as to hold in mud or sand, by providing either large fixed or movable flukes in themselves.

But I claim the method described of fitting a pair of movable flukes, g, to a suitable anchor, so as to fit it to hold in soft or sandy soil, by means of the tie rods, h, thimble, 2, and collar, I, for the purposes, and as specified.

SAFETY PORT FOR COAL HOLES—S. W. Frost, of Boston, Mass.: I claim combining with the door, B, and the frame, A, or the vault opening, a safety guard applied thereto, substantially in the manner and for the purpose specified.

VALVES FOR STEAM ENGINES—Thos. Goodrum, of Providence, R. I.: First, though I do not claim to be the first inventor of rotating tubular valves for the induction aededuction of the steam. I claim the rotary tubular valve having openings and cavities arranged substantially as described, to communicate with the induction and with one, two, or more openings or ports, a, leading to one end, and a corresponding number of ports, a', leading to the opposite end of one, two, or more cylinders, whereby the same valve is enabled to control the induction and eduction of steam to both ends of one, two or more cylinders.

Seeond, I claim the variable cut off, consisting of two segments of cylinders, o, and o', and plates, p p', applied within the tubular valve, substantially as described.

Third, I claim arranging the valve casing and the tubular valve with the axis of the valve in line with the cylinder or cylinders, as described, so as to bring the valve into an equally convenient position relatively to two or more cylinders, and enable the length of the passages leading from it to the cylinders to be reduced to the greatest possible degree.

[A description of this improvement in steam valves for engines may be found on another page.]

DIRECT-ACTING HYDRAULIC STEAM PUMPS—R. B. Gorsuch, of New York City; I claim effecting a water pressure upon the suction end of the pump plunger, M, in direct-acting steam pumps, at or near the completion of the stroke, without diminishing the resistance against the forcing end of the plunger, or in the manner shown, or in an equivalent way, for the purpose of closing the suction valves, a, filling the vacuous space in the pump chamber, preparing the force valves for opening and acting conjointly with the steam pressure upon the piston, B, whereby the steam valve, D, is operated with precision, whatever may be its velocity.

[A singular incident is connected with the issuing of this patent, which we cannot refrain from noticing. This same patent was issued to Mr. Gorsuch on the 7th of March, and his claim published in No. 27, SCIENTIFIC AMERICAN. A few days after the granting of the patent, Mr. Gorsuch received a notice from the Office that his patent had been refused, and gave as a reason for its decision, that his invention was anticipated by a patent granted to a well-known pump maker of this city. Upon investigation of the matter, it appears that after Mr. G.'s patent had been issued, and just as the document was to be mailed to him, the pump maker in question visited Washington, and, by some unexplained means, Mr. G.'s patent was cancelled, and a letter of rejection sent to him, referring for reference to a patent granted to said pump maker. The sequel is, Mr. Gorsuch has his patent; the Office are convinced his claims do not infringe upon the patent referred to, and we are satisfied that Mr. Gorsuch would have lost his patent had his interests not been well cared for.]

HOSE COUPLING—Smith Groom, of Troy, N. Y.: I claim a hose coupling composed of two parts, on one of which are spring clamps or jaws controlled by a friction ring, and on the other a groove, into which said jaws or clamps take, the whole being so arranged, when united, as to make a tight joint, and yet allow one half of the coupling to turn on the other half without uncoupling it, as set forth.

PLOWS—T. J. Hall, of Tawakana Hills, Texas: I do not claim a cutting wheel in connection with a plow, as this has been done repeatedly.

But I claim so hanging the cutter to the beam as that it may swivel therein, in combination with the supports at the edge of the wheel, substantially as set forth and described.

VALVE FOR WIND MUSICAL INSTRUMENTS—Gustavus Hammer, of Cincinnati, O.: I claim the combination of the bow, 15, string, 16, and the screw, 19, for working themselves, and preventing the string from slipping, all for purposes set forth.

I also claim the privilege of applying the improved valve to all musical instruments to which such valves are commonly attached.

MODE OF LOADING RIFLED CANNON—Luther Houghton, of Philadelphia, Pa.: Disclaiming the sabot, as now used, I claim for loading rifled or grooved cannon, the employment of a deep sabot at the base of the projectile, so as to be driven thereon, and into the grooves of the gun at the moment of discharge, for rendering said grooves effective in producing the rotation of the projectile, as specified.

LOOMS—B. H. Jenks, of Bridesburgh, Pa. Ante-dated Jan. 8, 1855: I claim the yielding rest or support for the picker, arranged substantially as described, to break the sudden blow or concussion with which the shuttle impinges upon the picker. thereby preventing the filling of the cop from being jarred off and entangled, and relieving the picker from danger of being broken.

I also claim separating or freeing the picker from the end of the shuttle by the same movement which shifts the shuttle boxes, operating through a combination of levers, cams, and springs, substantially as set forth, or through levers, cams, or treddles worked from any part of the loom.

DOUBLE-ACTING PUMP—B. F. Joslyn, of Worcester, Mass. I do not claim placing cylinders in any particular position in regard to the air chamber or other parts, nor the exact form or proportions of any of the valves, tubes, or other parts.

But I claim forming a direct passage to admit fluids to one part of the cylinder by means of a tube attached to and working with the piston, and passing through the other part and end, when applied to double-acting pumps, as described or any other substantially the same.

RAKES AND HAY ELEVATORS—Wm. J. Keeney & James R. Tarbox, of Switzerland Co., Ind.: We claim the combination of the apron, F, endless belt, M M, and elastic clearers, I I, either alone or in connection with two driving wheels, clutches, and a rake placed behind for the purpose of raking and elevating hay, as set forth.

HOISTING AND DUMPING COAL CARS—George Martz, of Pottsville, Pa.; I claim the combination of the coal car, C, and its carriage, B, with the hoisting carriage, D, in such a manner that whilst the hoisting carriage, D, is guided vertically up the shaft by its ways, A', the carriage of the coal car, C, is guided by the independent ways, A2 and N, in such a manner as to fit it the car when it obtains the proper elevation, and place it in such a position that its contents will be self-discharged into the shute, 6, substantially as set forth.

APPARATUS FOR FEEDING PAPER TO HAND PRINTING PRESSES—Ebenezer Mathers and Wm. D. Siegfried, of Morgantown, Va.: We claim the feeding hand presses, automatically, by means of the operation of the clamps, guide rods, cords, weights, pulleys, catches, and springs, arranged in the manner and for the purpose set forth.

COTTON GINS—J. B. Mell, of Riceboro', Georgia: I am aware that card clothing has been used with a rotary brush in a cotton gin, and therefore I do not claim them separately or combined.

I claim the combination of the beater, B, card cylinder, F, brushes, g and H, and plate, J, when arranged substantially in the manner described and set forth.

[On page 348, Vol. 9, a notice may be found of this cotton cleaner.]

LANCETS—Henry Mellish, of Walpole, N. H.: I do not claim the combination of a piston and charger, as such, for the purpose of depositing vaccine or other matter.

But I claim the construction of a lancet in combination with a charger and piston inside its blade, substantially as described, for the purpose of depositing vaccine or other matter, in a puncture made for that purpose, before the lancet is drawn.

COAL HOLE COVERS—F. H. Moore, of Boston, Mass.: I claim the method of securing the coal hole cover by means of the rods, b, or their equivalents whereby the cover may be raised more or less as required for purposes of ventilation or for the introduction of coal, and all danger to passers-by is avoided, as set forth.

BREECH-LOADING FIRE ARMS—Rollin White, of Hartford, Ct.: I claim, first, the application of the sliding breech to operate in connection with the trigger, through a tumbler, as described, in substantially the same manner as the hammer in ordinary fire arms, thereby making the breech serve not only its proper purpose of closing the rear of the chamber, but as the hammer for effecting the explosion of the charge, as set forth.

Second, the spring plate, B, applied substantially as described, to serve as a guide to conduct the cartridge into the open chamber, and as a guard to prevent the cartridge falling out at the rear of the chamber before the breech is liberated, as set forth.

STOVE PIPE TUBE—Thos. Moore, of Fair Haven, Vt.: I claim the double and adjustable concentric tubes, or stove pipe thimbles, constructed in the manner described for the purposes set forth.

PULLEY ARRANGEMENT FOR DUMB WAITERS—Andrew Murtaugh, of New York City: I claim the manner shown of arranging and suspending the waiter, A, and weight, B, between the cords, C D, arranged double over pulleys, substantially as and for the purpose set forth.

[See notice of this invention on another page.]

SEED PLANTERS—I. W. McGaffey, of Syracuse, N. Y.: I am aware that a swinging fertilizer discharge valve, in connection with a seed planter of itself is not new. Also, that a tilt apron abruptly operated by cams to discharge accumulated seed let on to it by a separately driven slide or valve has before been employed, but the relative arrangement, construction, and operation of these parts has been different; as substantive devices therefore or otherwise than as arranged and operating in connection, I do not claim them.

I claim the combination of the fertilizer tilt apron, K, with the seed distributing roller, F, constructed, arranged and operating together, substantially as specified.

[A short description of this waiter may be found on another page.]

FIRE PROOF FLOOR AND CEILING—F. A. Petersen, of New York City: I do not wish to be understood as limiting myself to the special form of the beams and tubes, and the kind of filling between them so long as the same result is attained by merely formal variations.

I claim the method substantially as described of making fire-proof floors and ceilings, by means of metallic flanched beams in combination with tile tubes interposed between and resting on the flanches of the beams, and filled in above, all substantially as and for the purpose specified.

FIRE ESCAPE LADDER—S. R. Roscoe, of Carlisle, N. Y.: I claim, in the described sectional ladder, for fire escapes, and other purposes, the combination and arrangement of the mortise, m, tenon, t, spring latch, k, hook, h, and the groove in which it traverses the whole being constructed to operate as described, for the purposes set forth.

Second, in combination with the described sectional ladder, I claim the traversing platform, P, and traversing roller, G, so constructed and arranged as to allow the sections of the ladder to be operated, as set forth.

RAILROAD CAR SEATS—A. D. Smith, of Meredith, N. Y.: I claim the combination of the arms, c c, which project from the back of a car seat, with the movable bars, d d, which are combined with the car seat and its arms, K K, or their equivalents, in such a manner that by the aid of the shoulders, g g, on the standards, p p, the back of the seat may be supported in the proper position for day riding, or be elevated into the proper position for night riding and supported in that position, substantially as set forth.

CHAIN PUMPS—Arcalous Wyckoff, of Columbus, Ohio: I claim the application of an elastic or other suitable valve to an endless chain pump cylinder, said valve being arranged so as to be capable of only opening upward, substantially as and for the purpose set forth.

[On another page a brief description of this invention may be found.]

PROTECTOR FOR LAMP SHADES—Charles and Anna C. Wilhelm, of Philadelphia, Pa.: We are aware that a patent has been granted to M. B. Dyatt, for a lamp shade frame made of metal, in which he claims the arrangement of the shade, shield, and wires, or their equivalents, with the intervening space, substantially as described, for the protection of the shade; this we do not claim.

We claim the introduction of mica as a transparent nonconducting material between the shade and the frame, for the purpose of preventing the shade from taking fire, or being otherwise injured, whilst the light is as free to be reflected as though there was nothing interposed between them, substantially as described.

BANK LOCKS—C. Gustav Mueller, of Charleston, S. C.: I claim, first, a key provided with extension bits, the individual length of each of which can be altered at pleasure, and still be applicable to the lock, as described.

I also claim the arrangement of the plates, M, and slides, l', for preventing any friction, and so as to prevent the possibility of feeling how the plates or slides are connected, as set forth.

I also claim the bars, M, having saw toothed racks as arranged with the sliding bars, i, and the projecting pins, m, for operating them from the outside of the lock, as described.

I also claim the arrangement of the horizontal changeable sliding pins which are moved by the bars, M, the rack toothed wheels or segments, and forked lever, U, which is moved by the projection on the circular plate, W, as set forth.

I also claim, as arranged, the bars, M, and the stationary plate, H, for holding the pins when they are withdrawn from said bars, as described.

I also claim the arrangement of the knob, the collar, R, with its bent arm, T, and the circular plate, W, for turning and holding said plate, substantially as described.

I also claim, as arranged, the rod, p, of the inner knob, the lever, l, shaft, t, lever, d, plate, r, and its spring, g, for connecting said knob with the bars, M, and operating them as set forth.

REPEATING FIRE ARMS—Rollin White, of Hartford Ct.: I claim, first, extending the chambers, a a, of the rotating cylinder, A, right through the rear of the said cylinder, for the purpose of enabling the said chambers to be charged at the rear, either by hand or by a self-acting charger, substantially as described.

Second, the application of a guard to cover the front of all the chambers of the cylinder, which are not in line with the barrel, or any number thereof which may have been loaded, combined with the provision of a proper space for the lateral escape of the exploded powder, substantially as described, whether the said space be between the cylinder and guard, or in rear of the cylinder, and whether the said guard be constructed with a recess, to receive the balls or be of such form as merely to stop the balls.

Third, combining a charging piston, G, with the hammer by means of gearing, substantially as described, or by the equivalent thereof, in such a manner that by raising the hammer to cock the lock, the piston is moved towards the chambered cylinder to force a cartridge from the magazine into one of the chambers thereof, and by the falling of the hammer, the piston is withdrawn to allow a new cartridge to be supplied ready to be driven into the next chamber of the cylinder as the hammer is again raised to cock the piece, as fully set forth.

Fourth, furnishing the hammer with an attachment, m, by which in the act of falling it may close the mouth of the magazine, substantially as described, before exploding the priming, and thus protect the charges within the magazine from ignition.

REPEATING FIRE ARM—Rollin White, of Hartford, Ct.: First, I do not claim the employment of a magazine to supply cartridges to the chambers or caps to the nipples, when the cartridges are arranged therein end to end, to be fed into the chamber or chambers or on to the nipple of the piece.

But I claim the method substantially as described, of combining and applying the magazine and charging tube either for cartridges or priming, to wit, the charging tube being arranged in line with the chamber or one of the chambers or the nipple, or one of the nipples of the piece, and the magazine being arranged in such a manner relatively thereto that the cartridges or caps lie side by side, to be sideways one by one, as required, in or the charging tube, by gravitation, a spring, or other means, on the retraction of the said piston from opposite the magazine, and to be fed into the chamber or on to the nipple by the movement of the piston towards it.

Second, I claim combining the rotating chambered cylindered with the charging piston, or its equivalent, in the manner substantially as set forth, so that by the operation of retracting the charger after charging a chamber of the cylinder, the cylinder shall be rotated to the extent required to bring a new chamber in line with the barrel

Third, I claim combining the hammer with the charging piston, in the manner substantially as described, so that the operation of moving the charging piston to drive a cartridge from the magazine into the chamber the hammer shall be raised to cock the lock.

Fourth, I claim the spring protecting plate, M, applied substantially as described, to fall into notches, u, u, in the rear of the rotating cylinder to protect the other charged chambers from the effects of lateral fire from the discharge of the chamber which is in line with the barrel.

[This is the fifth patent on fire arms taken by Mr. White, within a few weeks, through this office.]

PLOWS—Noah Warlick, of La Fayette, Ala.: I do not claim the whale lance shaped point separately.

But I claim the whale lance shaped point, D, having a notch in its upper side to receive the lower end of the coulter, in combination with said coulter and the y-shaped adjustable double brace, C C', as set forth.

[See a description of this plow on another page.]

EXCAVATING MACHINE—C. Williams, of Jackson, Tenn.: I claim having the frame or shaft, D, of the scoop or shovel, E, formed of two bars, e e, and having said bars working between friction rollers, d, in guide plates, c c, at opposite sides of the pole. A. The frame or shaft and shovel being operated by the means shown or their equivalents.

[On another page see a description of this machine; engravings are necessary to explain the matter well.]

MECHANISM BY WHICH APPROACHING VEHICLES OPEN AND CLOSE GATES—Enos Woodruff, of Elizabethtown, N. J.: I claim, first, applying weights in manner specified, or any similar manner, to the operating the gate.

Second, the application to such gates of the manner herein described, of causing both latches to lift at the same time.

Third the application of catches with one side higher than the other, to a rotating gate.

Fourth, the manner above described of preventing the tread of an animal from opening the gate, or any mode analogous thereto.

CULTIVATORS FOR TOBACCO—Francis L. Smithson, of Mecklenburgh County, Va.: I claim the combination of the harrow teeth and cylinder, substantially in the manner and for the purpose set forth.

ARRANGEMENT OF MEANS FOR FREEING STEAM BOILERS FROM SEDIMENT—Hiram Strait, of Covington, Ky.: I claim, in the construction of a steam boiler of any kind, the arrangement and combination of the valved partition, blow-off pipes, and cock or valves, so as to expel its sediment, mud, scales, impurities or incrustations, at any time and in a few minutes, by the joint or separate force and pressure of its own steam and water, without exhausting either or suspending any of its ordinary duties or business, and thus render a steam boiler strictly and thoroughly self-cleaning substantially as herein specified.

[An engraving of this invention will be published next week.]

BREECH LOADING FIRE ARMS—George H. Soule, of Jersey City, N. J.: I claim the use of the double-acting cam, in combination with the charging chamber and breech piece, having an opening, P, in it, for cutting off the end of the cartridge, and discharging the fragments thereof from the charging chamber, the said parts made and operating in combination with the barrel and magazine of a gun, substantially as set forth.

FOLDING BEDSTEADS—William Stoddard, of Hingham, Mass.: I claim, the making the side rails of bedsteads in sections hinged together, and also to the head and foot posts, so that they will fold together substantially as specified, in combination with the slats which support the bedding, which slats are so constructed and provided with pins or projections near the ends of them, as to brace or hold the folding rails firm when the bedstead is extended essentially in the manner and for the purposes set forth.

GRAIN CLEANER—Benjamin J. Trimmer, of Parma, N. Y.: I claim the construction and arrangement of the india rubber scroll and spring teeth regulated by the bridge tree, for the purpose and in the manner substantially as described.

WASHING MACHINES—George W. Edgcomb, of Lima, Ind.: I am aware that a wash-board has been made of a conical form, having its surface higher above the bottom of the tub at the circumference than at the center, with radial ribs of the form of a half cone attached to it, and to the bottom of the tub with their broadest end outwards, and with spaces between them of such width and depth as to receive the clothes between them in such a manner as to turn them over, has been used before, in the washing machine of Joel Wisner, patented November 8th. 1853, and therefore I do not claim such as my invention, for the reason that I have made a marked improvement thereon.

I claim the alternating radial arrangement of the tapering rubbers, O and I, upon the under side of the actuating disk, G, and upon the bottom, H, of the tub, substantially in the manner and for the purpose set forth.

HARROWS—Charles Clareni, (assignor to Chas. Clareni & George P. Field,) of New York City: I claim making the rotating harrow in flexible segments, as described.

SCRAPERS FOR REMOVING DIRT FROM BOOTS AND SHOES—Ozro A. Crane, and Henry J. Lewis, of Green Point, N. Y. (assignors to Ozro A. Crane, aforesaid,): We claim the method described and shown, of causing the brushes, c, to accommodate themselves to any size or shape of boot or shoe, and brush off both sides at once, by so attaching said brushes that they shall be forced together by springs, substantially as specified.

FIXTURES FOR CURTAIN ROLLERS—John Hartshorn, and Dexter H. Chamberlain, of Boston, Mass. (assignors to John Hartshorn, aforesaid): I do not claim balancing and supporting window curtains by means of friction upon the ends of their rods.

But I claim the bent socket, E, pivoting upon the window jamb, and secured thereto by means of screws, as described, whereby sufficient friction may be placed upon the rod to balance a curtain of any size or weight, without the use of springs or other contrivances for the purpose.

RE-ISSUES.

VAULT COVERS—Thaddeus Hyatt, of New York City. Original patent dated Nov. 2, 1845: I claim, in covers for openings to vaults in floors, decks, &c., making them of a metallic grating or perforated metallic plate, with the apertures so small that persons or bodies passing over or falling on them, may be entirely sustained by the metal, substantially as described, but this I only claim when the apertures are protected by glass, substantially as and for the purpose specified.

And I also claim, in combination with the grating or perforated cover and glass fitted thereto, the knobs or protuberances on the upper surface of the grating or perforated plate, for preventing the abrasion or scratching of the glass, substantially as specified.

GRAIN AND GRASS HARVESTERS—Abner Whitely, of Springfield, Ohio. Original patent dated Sept. 19, 1854: I claim, first, the combination of the rake, O, swinging or suspended from one rod of the reel, with the guides, L L, and ways, S S, substantially as above set forth and described, for the purpose not only of delivering the grain at the rear of the platform, but also for better directing the standing crop to the cutters.

I do not claim any rotary sweep rake carried on arms in the shaft which drives it, and sliding on these arms to and from said shaft, permitting it to be adjusted to the platform by guides for that purpose, nor any such guides, whether combined with the reel or not, neither do I claim any such guides as are used for reciprocating rakes.

Second, I claim the guides for forcing the grain into the end of the reel as described, and for the purposes set forth.

I do not claim any guides for guiding the grain into the reel, when they are placed below the lowest point at which the reel rods worked.

Third, I claim the latch, f, and appendages, by which the operator is enabled to permit more or less grain to accumulate on the platform between sucessive actions of the rake.

Fourth, I claim placing the vibrating knife bar, 3, and cutters thereon, between alternately placed fingers, 4 and 5, for the purpose of dispensing with the slot guards, and sustaining the line of cut by throwing the action of the alternate shear edge of the blades of said cutters on the upper and lower sides of the said fingers.

Fifth, I do not claim the mere alternation of the teeth on the cutter bar, so that the two edges of one tooth will be above, and those of the next below.

But I claim the alternate edging of the same tooth, and so placing them together, that the two adjacent edges of successive teeth, which act against the same finger, may be alike turned in one direction, while the next two edges, acting against the next finger, are alike turned in the contrary direction.

DESIGN.

FORK AND SPOON HANDLES—Henry Biggins, of Mount Vernon, N. Y., (assignor to Michael Gibney, of New York City.)

Sharp's Rifle in England.

The merits of Sharp's American breech-loading rifle has been brought before the British Parliament, and its introduction into the British Army demanded. Mr. Maguire stated that he had witnessed experiments with it when it was fired forty times in five minutes. Col. Knox said he had also seen the weapon tested, and he considered it to be far superior to any other in use. Mr. Monsell also saw it tested, and agreed with all that had been said in its favor by Mr Maguire. He also stated, however, that as soon as the authorities at Woolwich had tested various rifles, and breech-loading fire arms, and reported on the best, they would at once proceed to manufacture it; at present, the question was between the choice of two, Mr. Sharp's, of America, and M. Lenoir's, of Paris.

Oil from the Bowels of a Mountain.

A statement has been made to us (for the truth of which we do not vouch) that a large number of springs have been discovered in Western Pennsylvania, which, by a process of evaporation and distillation, yield an oil equal in purity to the best sperm oil. It is represented as furnishing a brilliant light, and as not being affected by the cold with the thermometer 14 degrees below zero. It is said 1000 gallons of this oil has already been produced. Is there any truth in the report?—[Philadelphia Ledger.

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TO CORRESPONDENTS.

J. D. B., of Ala.—We believe the Patent Bill, in its present shape, never can become a law. Your remarks are to the point, and it gives us courage to have an expression of your views on it.

J. B. C., of Tenn.—The sketch you have sent to show how a car can be moved on the road by the application of a mechanical force in a contrary direction, is not applicable to a vessel moved by the wind against the wind, and your own remarks are in accordance with this view. Why should experiment be required, as you suggest, to test the question. If correct in theory, and it can be made to move with a three mile velocity per hour against the wind, all you have to do is to increase the gale, and make the vessel move still faster against the wind.

E. H., of Pa.—We never knew that engineers received free passages, before: think it is a mistake.

A. K. S., of Pa.—You can purchase dies, we think, for cutting names on sheet brass, of John R. Hoole, 124 Nassau street, New York.

S. J. G., of Iowa—Before we can pass our opinion upon your improved square, we shall require a sketch and description of it. We will mail to your address a circular of information.

B. G. N., of N. Y.—There is no novelty in your device for indicating the stopping places of railway trains. We have seen essentially the same device before.

W. K., of Nova Scotia—We would be very glad to comply with your request, but we fear the subject would not interest many of our readers. We aim to publish novelties, such as indicate the progress of invention.

L. B., of Mich.—We fully understand your invention, and cannot advise you to apply for a patent. It has been, and is, a common practice to construct a single slide valve to open the exhaust before the end of the stroke, and before the admission of steam on the opposite side of the piston. We do not know that the exhaust has been opened all the way before the termination of stroke, but if it has not, your invention is only an extension of a well known principle of operation.

D. W. W., of Mass.—We have seen filters constructed on essentially the same plan as you describe, therefore we cannot advise an application for a patent, as we think it would be unsuccessful.

S. L., of Md.—See a method of making water-proof blacking on another column.

B. J., of Va.—It would be impossible for us to describe to you the various plans of coal digging machinery. If you wish our opinion as to whether your plan is new, send us a model, or a drawing and description. Search the SCIENTIFIC AMERICAN for improvements in making alum salt. We cannot lay our hands upon the same.

G. W. S., of N. J.—Where do you get the power to move your vessel three miles faster than the wind that drives it, for certainly, it is very evident if you move your vessel so fast directly against the wind, it must be able to move three miles faster than the wind before it. You may see different, but we cannot.

G. W. E., of Md.—You appear not to be willing to see our position, in reference to the age of the world. We have said that the first three days of creation could not be solar days if the sun was created after that, and then you say, that it devolves upon us to show how the light was separated from the darkness in those days. You might just as well say it devolves upon us to tell how solar light was created.

T. A., of Penn.—Stucco is unfit for plastering the outside of buildings on lathe work. Brick buildings are covered with mastic sometimes, and this does very well, but could not be applied on lath work.

W. B., of Pa.—We are not able to tell whether the process of your friend is patentable or not, as we do not understand it. If he merely uses the acid which you have named in combination with the lard, then it is a new compound, not a process, you should have explained it more fully.

R. N., of Ga.—The asphixiating bullet must be a claptrap name. Hunt's books on photography, and Smees' on electrotyping, are good. All the machines that we have seen applied to rice hulling act on the beetling principle. We do not think that friction applied to hulling can be patented as a principle of action, it having been appplied to other grains; but your method may be patentable.

A. S., of Mich.—The sketch of your sawing machinery presents to us what we believe to be a useful and patentable improvement.

A. F. M., of Pa.—The diagrams you sent of your steam machine, illustrates the invention very well, but your claims, as set forth, would be inadmissible. Should think the Office would grant you a patent, although a great number of such machines have been introduced within a few years. We could not say that your machine is the best we have seen, but should think it would operate well.

L. & L., of——We cannot tell you the cost of an engraving until we know how elaborate your machine is. Send us your letters patent or a model, and we will then be able to inform you the expense of preparing the cuts.

A. K., of Ill.—Your question in regard to crystalotypes is answered in the article upon that subject in last week's paper.

E. H. T., of N. Y.—The sale of your invention, in the way you mention, to an individual, would be proper and lawful, but he would claim the right of disposing of it as he thought proper, and you would have no voice in the matter.

E. R., of Md.—You are mistaken. The ordnance on which Mr. Wolter took a patent was quite dissimilar to the one described by you.

J. F. O., of Ala.—We think your way of securing the saw to the stirrup is not patentable. $1 received.

E. W., of Mass.—We cannot inform you whether Mons. Moinier's steam generator has been put in operation and on sale in this country. Presume it has, else his patent would be worthless.

S. P. S., of N. Y.—It is certainly time your application was acted upon, and we have written to the Office to learn the cause of delay. When we get advice from the department we will write you.

S. H., of Ky.—Many patents have been taken for improvements in straining saws within a year or two past, but none of them are like yours that we have seen, and we think you might get a patent.

J. W. A. R. M., of Canada—Your letter was posted to Mr. Masher, who will give you attention. We sent you all the numbers of Volume 5 that we had.

C. H. B., of Vt.—Without a model or drawings we can form no idea as to the patentability of your apple paring machine.

M. W. J., of Mass.—Your horizontal windmill is not patentable. Mincing knives of malleable cast iron, hardened as you propose, would last some time—not equal to steel of course.

F. & P., of Pa.—To get up suitable engravings of your handle machine for our columns, would cost you $15; we would not advise to have them appear until the case is acted upon at the Patent Office.

J. A. S., of Mass.—The mere assertion that you have got up a machine which will accomplish a certain result, without describing its construction, is not sufficiently adequate for us to express an opinion upon. If you will send us a model or even a good drawing, we shall then be able to give you the information solicited.

H. R. Corson, of Markham, C. W.—Wishes to know who sells the best bark mills. Manufacturers of such mills will please address him.

S. S., of N. J.—Your diagram of the sash catch represents a convenient contrivance, but is far from possessing patentable novelty. Equivalently the some means for holding the lower sash at any desired point in the frame, is in common use.

W. D., Jr., of Pa.—If you can accomplish such advantageous results from your improvement in ring and traveler spinning, as you state (and we see no reason to think you cannot,) you have a very valuable invention, one well worth securing by patent. Send us a model if you have one, and if you have not, you had better have one made at once.

H. A. L., of O.—Three dollars received for repairing model—all right.

D. W. D. F., of Pa.—Your fly wheel is novel, but not useful or practicable. If you should use those "drop pieces" as you term them, upon a wheel propelled with much velocity, we should advise you to look out for your head.

A. W. G., of Pa.—We cannot give you better advice concerning your alleged invention than we have already done.

B. B. W., of Miss.—We have no knowledge of Frazee's saw mill, therefore can give you no advice concerning it.

Money received at the SCIENTIFIC AMERICAN on account of Patent Office business for the week ending Saturday, April 7:—

J. N., of N. Y., $25; B. & T., of O., $30; T. & S., of N. J., $100; J. M. P., of N. Y., $55; G. W. Z., of O., $25; S. D., of Me., $25; E. F., of Ill., $25; M. B., of N. Y., $35; J. H. W., of N. J., $30; E. W., of Mass., $30; J. H. B., of N. Y., $25); E. B., of Ind., $30; M. D. D., of N. J., $10; L. E. P., of Miss., $24; J. H. G., of O., $10; E. R. N., of Pa., $10; W. H. H., of Mass., $30; D. W., of N. Y., $30; C. W., of L. I., $30; H. I. B., of Pa., $30; F. & P., of Pa., $30; T. A., of Ala., $27; J. H., of Wis., $20; U. H., of Ct., $25; S. H., of N. Y., $250; J. H. G., of Ky., $25; G. L., of N. Y., $30; W. A., of Ct., $30; J. D., of Pa., $25; J. H. B., of Pa., $25; S. S., of Mich., $20; W. W. H. M., of N. Y., $60; C. & E., of O., $20; J. A. W., of Miss., $10; G. K., of Va., $30; F. C., of N. H., $30; T. A., of N. Y., $30; R. R., of Pa., $30; D. A. B., of O., $10; J. A. R., of Mass., $12; H. S., of N. Y., $20; E. G. H., of N. J., $25; P. S., of N. Y., $10; S. S. T., of Pa., $20; W. S. F., of N. Y., $12; T. R. D., of N. Y., $10; C. M., of Pa., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 7:

S. D., of Me.; H. A. R., of N. Y.; E. F., of Ill.; G. W. Z., of O.; H. S., of N. Y.; T. A., of Ala.; J. W., of Ga.; U. H., of Ct.; E. G. H., of N. J.; P. S., of N. Y.; S. S. T., of Pa.; F. & P., of Pa.; J. H. B., of Pa.; S. S., of Mich.; L. E. P., of Miss.; W. S. F., of N. Y.; G. A. B., of Ill.; J. D., of Pa.; T. R. D., of N. Y.; J. A. R., of Mass.; G. K., of Va.; J. A. W., of Miss.; J. N., of N. Y.

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IMPORTANT TO INVENTORS—MESSRS. MUNN & CO., 128 Fulton street, New York, Publishers and Proprietors of the SCIENTIFIC AMERICAN, having for many years been extensively engaged in procuring Letters Patents for new mechanical and chemical inventions, offer their services upon the most reasonable terms. Patents promptly secured in the United States, Great Britain, France, Belgium, Holland, Austria, Russia, Spain, and in all countries where they are granted. All business entrusted to their charge is strictly confidential. Private consultations respecting the patentability of inventions are held free of charge, with inventors, at their office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patsent present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week, and enjoys a very wide-spread and substantial influence. Parties intrusting their business in our hands can rely upon prompt and faithful attention.—Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

The offices of Messrs. Munn & Co.'s American and Foreign Patent Agency are at 128 Fulton Street, New York; London, No. 32 Essex st., Strand; Paris, No. 29 Boulevard St. Martin: Brussels, No. 6 Rue D'Or.

MATHEMATICAL INSTRUMENTS.—The undersigned furnishes, free of charge on application to all part of the United States, his new Illustrated Catalogue of Mathematical, Optical, and Philosophical Instruments. C. T. AMSLER,
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TO DISTILLERS OF OILS, ROSINS, &c, India Rubber Manufactures. Varnish Makers, and others. The advertiser, SAMUEL CHILDS, has received a patent for an improvement in the mode of using heated steam which is very important to all persons engaged in the above businesses; and he is desirous of disposing of the whole or separate rights on moderate terms. For particulars apply to LEMUEL W. SERRELL, Patent Agency, 289 Broadway, N. Y. 31 2*

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31 2* 264 Chestnut st., Philadelphia.

A NOVELTY—A Writing Machine, by which, with common pens, ink, and paper, an original and one or more copies (either on single sheets or in a blank book,) can be written simultaneously. It is very simple in construction and works with all the freedom of a detached pen. It fills a great desideratum, besides entirely superseding the copying-press. Every lawyer, copyist, merchant, business, and literary man should have one. It is equally useful for copying drawings, lace and calico patterns, and engravings on wood. The patentee offers rights for sale in such States and cities as still remain undisposed of. It is a fortune for the purchaser. For models prices, &c., write or apply to
31 4* D. SHEPHERD, Counsellor-at- aw, No. 7 Wall st.

J. P. MERRIAM'S MACHINERY DEPOT—Sandusky City, Ohio, 228 Water st. Has on hand and furnishes to order Stationary and Portable Engines, Machinists' Tools, Slide Lathes Drills, Planers, Chucks, Portable Grist, and Child's Circular Saw Mills, Fay's Sash Machines, Steam Gauges, &c. 31 5eow*

STEAM GAUGES—Thirty-three superior Mercurial with Glass Shades, will be sold in the lot at $5 each, to close concern. Can be seen at the office of J. P. PIRSSON, No. 5 Wall st. 1*

POWER PLANERS—Persons wanting Iron Planers of superior workmanship, and that always give satisfaction, are recommended to the New Haven Manufacturing Co., New Haven, Ct. 31tf

MACHINISTS' TOOLS—Meriden Machine Co. have on hand, at their New York Office, 15 Gold st., a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c, all of the best quality. Factory West Meriden, Conn. 31 13*

TO LET—Light Rooms with steady power, on Canal, Elm, and Walker, streets, at very low rates. Situation central. Engine, buildings, and occupants first class. Facilities for exhibiting new machines, by Mr. GAUDU, 102 Walker st. 31 3m*

KNITTING MACHINES—The subscriber having purchased of John Pepper the right to make and sell his new and improved knitting machines (one of which was on exhibition at the late Fair in Philadelphia) now offers them for sale. These machines are cheaper and are warranted to produce more work and of a better quality than any other machines in use.
WALTER AIKEN.
Franklin, N. H., April 4, 1855. 31 2*

A CLIPPER AMONG THE MONTHLIES.—The NAUTICAL MAGAZINE, devoted exclusively to Maritime interests, embracing shipbuilding, commerce, navigation, and marine engineering, enlarged 96 pages. This work contains draughts of some of the finest vessels of the age, with other engravings, and is one of the most valuable publications in the country. Terms, single copies $5 per annum, or $2,50 per volume. Club Rates—Five copies for $20; thirteen copies for $50. Sample copies sent when requested. Address GRIFFITHS & BATES, Editors and Proprietors, 115 and 117 Nassau st., New York.

THE UNDERSIGNED, having disposed of his entire interest in the Patent Rope Machine, of his invention, to Mr. J. W. Post, would respectfully request all communications concerning the use of said machines in any part of the United States to be addressed to Mr. J. W. Post, No. 23 John st. N. Y. Wm. ROBINSON, Jr.,
1* Warsaw. N. Y.

SALE OF WOOLEN MACHINERY AT AUCTION—Without reserve, in lots to suit purchasers; 2 sets of 40 inch woolen cards well adapted for fine work; 2 jacks of 180 spindels; 2 jacks of 200 spindles; 1 picker; 1 twister; 1 woap ribbed loom and woapmill; 1 seven horse power engine; 2 two flue boilers; 1 fulling mill. Lots of shafting, pulleys and belting: office fixtures; 1 dye house; two large copper kettles. The above machinery is all in good running order, and will be sold, positively, without reserve, the 24th of April, in Bow-street Hosiery Factory, at Portsmouth N. H. Terms cash, or 6 months credit with good security. 31 2

UNITED STATES PATENT OFFICE,
Washington, March 6, 1855.

ON THE PETITION of James Brett, of Matteawan, New York, praying for the extension of a patent granted to him on the 10th July, 1841, for an improvement Key Wrenches, for seven years from the expiration of said patent, which takes place on the 10th day of July, 1855—

It is ordered that the said petition be heard at the Patent Office, on Monday, the 25th of June next, at 12 o'clock, M.: and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 15th of June: depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York, and Post, Boston, Mass., once a week for three successive weeks previous to the 25th day of June next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 29 3

OPTICAL, MATHEMATICAL, Mathematical, and Philosophical Instruments.—Our Pamphlet Catalogue, with prices affixed, containing numerous well executed illustrations is furnished gratis on application, and sent by mail, free of charge, to all parts of the United States and Canada.
McALLISTER & BRO.,
29 4 Optician, 194 Chestnut street, Philadelphia.

JAMES O. MORSE & CO., 79 John street, New York, dealers in all descriptions of pipes for steam, gas, and water, and manufacturers of every variety of fittings for the same, together with improved valves, cocks, oil cups, whistles, &c., steam pumps, gauges, boilers, and boiler flues. Building warmed by steam or hot water, gas apparatus for towns, facories, and private dwellings. 29 4*

STATIONARY STEAM ENGINES—The subscribers are now prepared to furnish, on short notice, Horizontal Engines, on iron bed frames, strong and substantial, plain or highly finished, from 6 to 100 horse power, with or without pumps, boilers, &c., warranted to give satisfaction. Also shafting and mill work of all kinds, and the various sizes (double and single) of Wells & Co.'s patent circular saw mills. Sash and blind machinery made to order. W. E. HAYES & CO., Northampton, Hampshire Co., Mass. 28 4*

STEAM ENGINES FOR SALE—Very cheap—One 30, two 10, one 8, and two 5 horse power; also two Re-slitting Saw Mills. J. C. PORTER, 29th street and 11th avenue, N. Y. 30 2*

MACHINE GROUND CIRCULAR SAWS—(Patent applied for.) Mill men would do well to try these saws, they are perfectly free from thin or thick places, can be used thinner and with less sett, and run faster than any other hitherto made. All diameters and thicknesses warranted perfectly true. HENSHAW & CLEMSON, 31 Exchange street, Boston. 30 7*

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store. it occupies a space 5 by 3 feet, weighs 1500 lbs. price $240; other sizes in proportion.
29 e3w

SHIP'S BLOCKS—Platt's Patent, May 18, 1852, a much admired and durable block. For sale by C. H. Platt, 46 West st., New York City. 29 4*

ANDREWS & JESUP—Commission Merchants, Cotton and Woolen Machinery, Steam Engines, Machinists Tools, Belting, &c., Importers and Dealers in Manufacturer's Articles, No. 67 Pine st., N. Y. 23 1y

IMPROVED PORTABLE CIRCULAR Saw-mills, — Manufactured by W. HERRICK, near the Depot, Northampton, Mass. N. B. Saw Mandrills, Saws, improved Saw-sets and Upsets furnished and warranted. Orders filled for any part of the United States. 27 10*

SMITH'S WATER-TUYERES—Prosser's Patent.—These Tuyeres are made of wrought-iron, and are warranted not to crack by the most intense heat. Also Water-backs and Tables, for kitchen ranges hotels, and restaurants, &c., requiring a constant supply of hot water. THOS. PROSSER & SON, 28 Platt st., New York. 27 tf

STAVE DRESSER AND JOINTER.—For tight work decidedly the best and cheapest in use. Machines can be seen in operation at SHAW & KIBBES, Shook Manufactory, Baffalo, N. Y., and models may be seen at the office of the agent, JAMES S. POLHEMUS, 117 Pearl street, New York, to whom, or to the patentees, H. & L. D. BENSON, Jackson, Susquehanna Co., Pa., any communications may be addressed. 27 13*

1855—WOODWORTH'S PATENT Planing, Tonguing, and Grooving Machines—The subscriber is constantly manufacturing, and has now for sale the largest and best assortment of these unrivalled machines to be found in the United States. Prices from $85 to $1450. Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania, JOHN GIBSON, Planing Mills, Albany, N. Y. 29 9*

JOHN PARSHLEY—Nos. 5 and 7 Howard street, New Haven, Conn., is now ready to furnish at short notice, Engine Lathes for shafting of 23 inches swing, 16, 18, and 20 feet beds, 12½, 14½, and 16½ feet between centers; also Engine Lathes of 38 inch swing 14, 17, 20 and 25 feet beds, and 9, 12, 15, and 20 feet between centers. Circulars, with cuts and all required information can be had by addressing as above, post paid. 28tf

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Science and Art.

Why do Teeth Decay.

All the theories that again and again have been advanced in answer to this inquiry, have long since vanished before the true doctrine of the action of external corrosive agents. The great and all powerful destroyer of the human teeth is acid, vegetable or mineral; and it matters not whether that acid is formed in the mouth by the decomposition of particles of food left between and around the teeth, or whether it is applied directly to the organs themselves, the result is the same, the enamel is dissolved, corroded, and the tooth destroyed. Much, very much of the decay in teeth may be attributed to the corrosive effects of acetate acid, which is not only in common use as a condiment in the form of vinegar, but it is generated by the decay and decomposition of any and every variety of vegetable matter. When we consider how very few persons comparatively take especial pains to remove every particle of food from between and around their teeth immediately after eating, can we wonder that diseased teeth are so common, and that their early loss is so frequently deplored?—[Exchange.

[The above does not afford good reasons why the teeth of our people are so subject to early decay, in comparison with the teeth of the people of some other countries. It is generally allowed that there is work for five times the number of dentists in the United States that there is in Britain; and that, while bad teeth is the exception there, it is the rule here. We believe that our people take more pains with their teeth by washing than the natives of Ireland, and yet the Irish have far better teeth. Acetic acid cannot be the cause of this early decay of teeth among us; indeed, we know it is not. There is no subject of more importance than this; for if the early decay of teeth among our people is not the result of ill health, we all know that bad teeth are injurious to health. The health of a people is a question of the very first importance; it is of more consequence than any other. It is our opinion that if more coarse *hard* biscuit were eaten in early life, to exercise the teeth, they would be less liable to early decay. The very form of some of our teeth are adapted to grinding, and if not properly exercised, they must become tender and delicate.

Water-Proof Blacking.

18 ounces of india rubber are to be dissolved in about 9 pounds of hot rape oil.—To this solution 60 pounds of fine ivory black, and 45 pounds of molasses, are to be added, along with 1 pound of finely ground gum arabic, previously dissolved in 20 gallons of vinegar, of full strength. These mixed ingredients are to be finely triturated in a paint mill till the mixture becomes perfectly smooth. To this varnish 12 pounds of sulphuric acid are to be now added in small successive quantities, with powerful stirring for half an hour. The blacking thus compounded is allowed to stand for 14 days, it being stirred half an hour daily; at the end of which time 3 pounds of finely-ground gum arabic are added; after which the stirring is repeated half an hour every day for 14 days longer, when the liquid blacking is ready for use.

In making another paste blacking, take the above quantity of India rubber, $\frac{3}{4}$ oil, ivory black, molasses, and gum arabic, the latter being dissolved in only 12 pounds of vinegar. These ingredients are to be well mixed, and then ground together in a mill till they form a perfectly smooth paste. To this paste 12 pounds of sulphuric acid are to be added in small quantities at a time, with powerful stirring, which is to be continued for half an hour after the last portion of the acid has been introduced. This paste will be found fit for use in about 7 days.

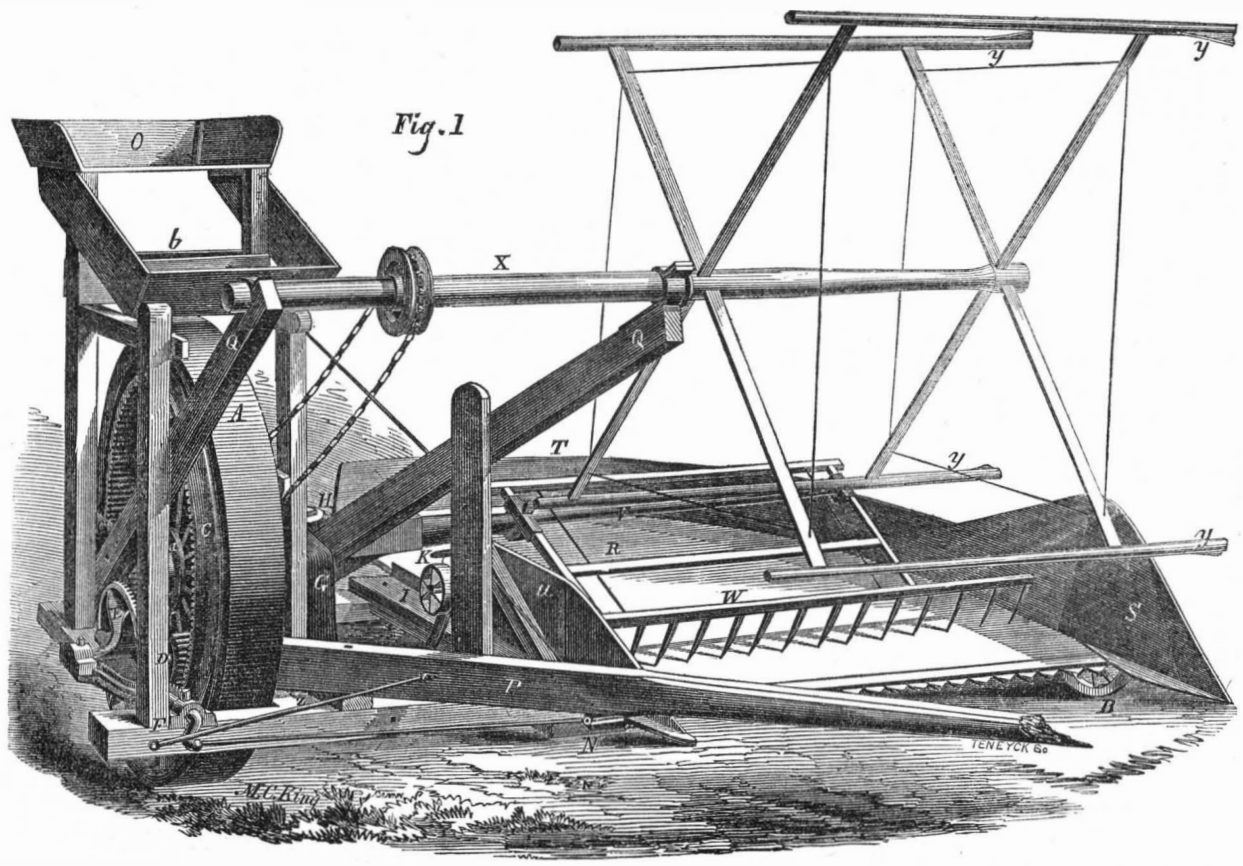
The morus multicaulus grows luxuriantly in Florida. Cocoons of the silk-worm are said to be sometimes found upon it in the wild state.

History of Reaping Machines.—No. 27.

On the 9th of January, 1855, we find that a patent was granted to John E. Newcomb, of Whitehall, N. Y., for a mode of keeping the scythe plate to the shear edges by a pressure bar and set screws, (see claim page 150, Vol. 10, Sci. Am.) On January 16th following, a patent was obtained by O. B. Judd, of Little Falls, N. Y., for a combination of rotary and stationary cutters, embracing three claims, (see page 158, Vol. 10, Sci. Am.) On the 30th January following, a patent was granted to Aaron Palmer, of Brockport, N. Y., for an improvement in the frames of harvesters, (see claim on page 174, Vol. 10, Sci. Am.)

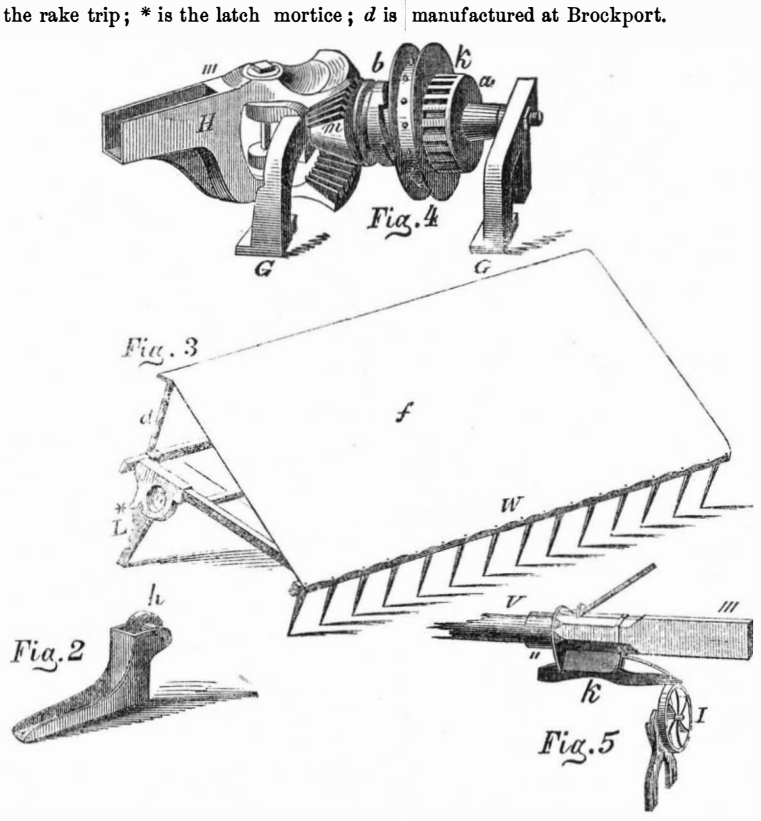
The annexed figs (51, 52, 53, 54, and 55, of the series of cuts) are perspective views, fig. 1, of the complete harvester, and figs. 2, 3, 4, and 5, detached views of parts of the improved machine of Palmer & Williams, embracing three patents, the first dated July 1st, 1851, the second Jan. 24th, 1854, and the third the patent of Sylvanus Miller, re-issued to the assignees Nov. 21, 1854; it relates solely to the cover or roof, a very essential thing to the proper working of a self-raker, and shown in fig. 3. The patent granted on the 30th of January, mentioned above, is for improvements in a mower. The same letters in the

Fig. 1



annexed figures refer to like parts. A is the master or driving wheel; B the guide and support wheel. The large wheel has cogs on its inner surface, which give motion to the gearing, E D, and operate the crank, F, which gives a reciprocating motion to the cutters through the rod, N. Z is a stay rod, *y y* are the blades of the reel, X is its shaft, which is supported on the bearers, Q Q, and receives motion by a chain belt from a spoke wheel on the driving wheel shaft. O is the driver's seat; P is the pole. S is the divider guard. R is the grain platform, T is its back board, and *u* its side one.

W is the rake head, as shown in fig. 3. L is the rake trip; * is the latch mortice; *d* is a steel brace, and *f* the light thin roof, embraced in S. Miller's claim, for the purpose of separating the gavel from the falling grain. The rake lifter, fig. 2, has a roller, *h*, with a flange; against this the rake lifter, L, strikes as the rake sweeps around, and raises up the rake head, W. In fig. 4 *a* is a cast iron hub, K the chain wheel and *b* a ratchet. G G are arch supports. H a curved rack, and *m* a pinion. In fig. 5, I is a wheel to unlatch the rake. V is the rake lever, and *k* is the rake latch. The reapers are manufactured at Brockport, N. Y., where A. Palmer resides. S. G. Williams, the other partner, resides in Janesville, Wisconsin. The machines are manufactured at Brockport.



We have before us an account of the trial of self-raking harvesters, which took place at Bloomington, Ill., during the harvest last year, under the direction of a committee appointed by the Illinois State Agricultural Society.—The trial lasted five days, and an account of it was published in the Bloomington *Daily Pantagraph*. That committee unanimously awarded the highest premium to this reaper. The distance around the field where the trial commenced was nearly two miles, and perhaps this was the most thorough trial of reaping machines ever held in our country, as the report says the grain laid in every condition.

Inventors, and Manufacturers

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